

MARINE REVIEW.

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The New Gunboats

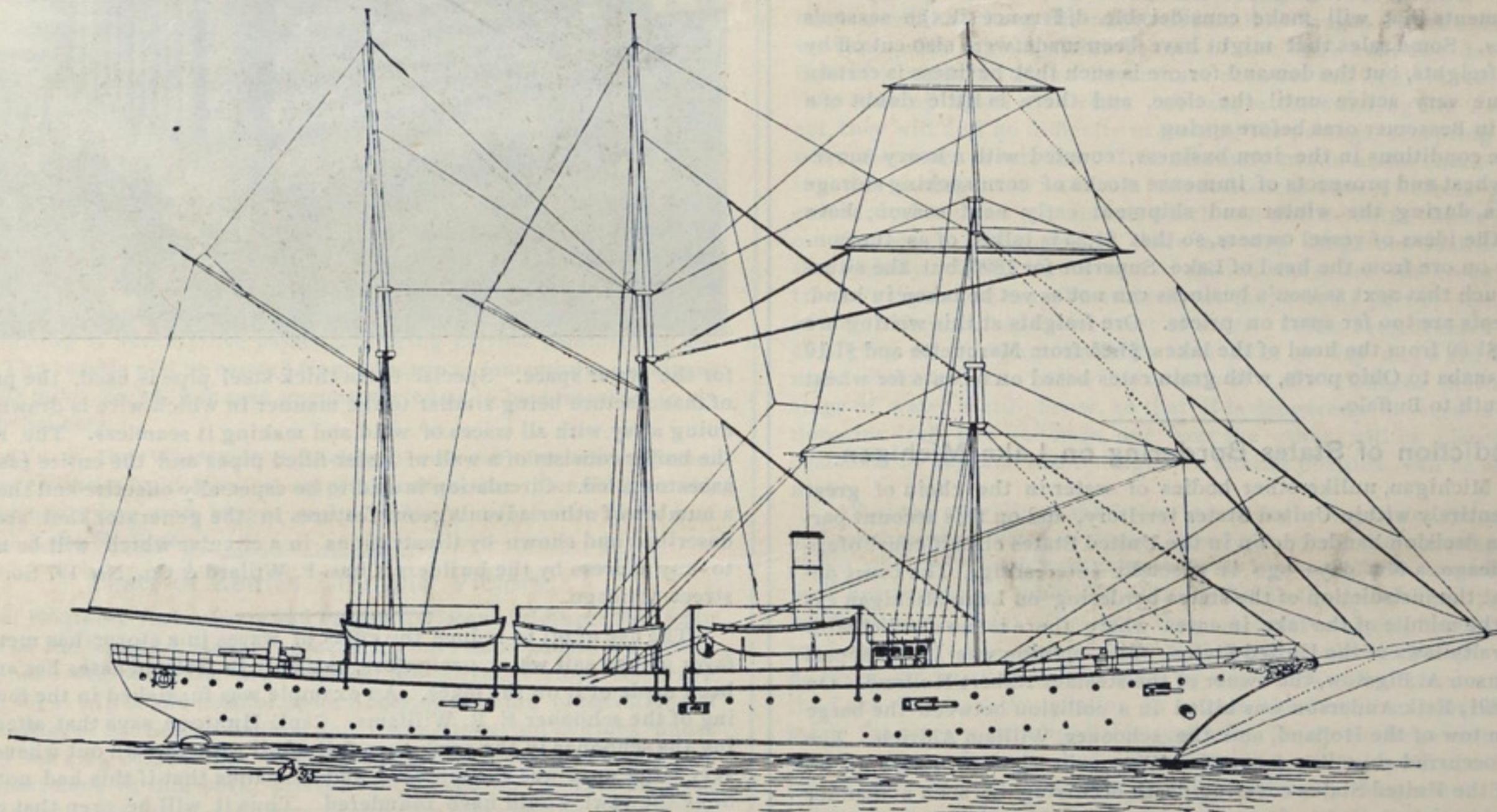
In view of the interest attending the letting of contracts for six composite gunboats authorized by the last congress, on account of the Detroit Dry Dock Co. being the lowest bidder for two of them, the REVIEW has secured from the navy department a very full description of these vessels. As the Detroit company's bid brings up a discussion of matters pertaining to the interpretation of treaty relations with Great Britain regarding the construction of vessels of war on the lakes, and the number of men-of-war entitled to fly the flag of the two nations on these waters, the whole subject of the navy department taking advantage of ship building facilities on the lakes is again under consideration in Washington, and is referred to elsewhere in this issue. It has already been noted that four of the vessels are to be single-screw sail vessels and two are to be of the twin-screw type carrying no sail. The dry dock company's bid was the lowest for two of the single-screw vessels as well as the two twin-screw ships, but it has been understood that in accordance with the report of the board of engineers they are to build, if they finally secure any part of the contract, two of the single-screw ships. On this account, it is one of the single-screw ships that is illustrated herewith.

In all the vessels framing will be of steel from keel up to water

The armaments, being identical in both types, will consist of six 4-inch, four 6-pounder and two 1-pounder guns, all rapid-fire, and will be disposed in this order: Four 4-inch guns in two batteries, port and starboard, on the gun deck amidships, the two other 4-inch guns being carried on the main deck, one at the bow and one at the stern, each having a wide arc of fire. The 6-pounder guns will be carried on the gun deck, two well forward, one on either bow and two amidships between the 4-inch guns, respectively, in the port and starboard batteries. The 1-pounder guns will be disposed where most advantageous on the hammock berthing.

The normal coal supply of the single screw boat will be 100 tons, with a total bunker capacity of 238 tons; the normal coal supply of the twin screw boats will be 120 tons, with a total bunker capacity of 250 tons. The single screw boat will be lighted by electricity, and provided with a steam steerer and steam windlass; space and weight are allowed for these features in the twin screw boats, bids to cover the boats with and without these adjuncts being asked, but their installation will depend entirely upon their possibility within the price limit of \$230,000.

When going under sail alone, the engines of the single screw boat will be uncoupled, allowing the shafting and screw to revolve simply by



ONE OF THE SINGLE SCREW GUNBOATS.

line. The upper edge of the wood plank will lap the top side plating about 3 feet. Plank of Georgia pine will be worked on the frames, secured thereto by composition bolts in such manner as to prevent galvanic action. The outside surface of the plank will be coppered. No plating will be worked on the under water-body of the vessel, except the keel plates, a strip of plating on each side of keel plates under the boilers to form the lower portion of a water tank and narrow strips for the plates under the longitudinals and bilge keels. The entire top sides will be plated as on steel vessels.

Throughout the machinery space an inner bottom of plating will be worked, giving added strength to this part of the vessel, enabling the bilges to be kept clean, and affording additional means of safety should the outer bottom be ruptured. The six vessels will be of two radically different types—one type carrying full sail power and propelled by a single screw, the other type having steadyng sails only and propelled by twin screws actuated by two separate engines. Their principal dimensions are as follows:

Single screw type. Twin screw type.

Length on load water line.....	168 feet	174 feet
Beam, extreme, at load water line.....	36 feet	34 feet
Draft, normal, to bottom of keel.....	12 feet	12 feet
Displacement, normal, about.....	1,000 tons	1,000 tons
Indicated horse power, about.....	800	800
Speed, an hour, in knots.....	12	12

the action of the passing water; and so slight is the retarding influence of the screw thus disengaged, that there is every reason to expect a sailing speed fully equal to the possibilities of the steam power conditions. The engines in each type are designed to develop the same horse power and to induce the same speed, that of twelve knots, differing only as regards shafting, number of screws and the incidental division of motive power.

For the twin screw gunboats, the engines will be rights and lefts, each in a separate water-tight compartment, and will be of the usual vertical, direct-acting, triple-expansion type, with a high-pressure cylinder, an intermediate-pressure cylinder and a low-pressure cylinder of 12, 18½ and 28 inches respectively, having a common stroke of 18 inches, capable of developing 800 horse power with 200 revolutions a minute. The engine of the single screw boats will also be of the triple-expansion type, with cylinders of 15¼, 23½ and 36 inches diameter and a common stroke of 30 inches, and to run at 150 revolutions a minute when developing the required 800 horse power.

Each boat will have two single-ended Scotch boilers with two corrugated furnaces 3 feet in diameter. Each boiler will have a diameter of 10½ feet and a length of 10½ feet, with 39 square feet of grate surface and 1,250 feet of heating surface, making a total heating surface of 2,500 square feet, and a total grate surface of 78 square feet. They will have moderate forced draught induced by two blowers for each boat applied

directly to the ash pit. The boilers will be placed side by side in the same compartment, with a common fire-room.

The essential reasons for the construction of vessels of the composite type are that they are largely independent of docking facilities and economical in the use of fuel. The exfoliation of the copper causes the barnacles, grass, etc., to be released just as soon as the vessel is put in motion, and the bottom is made comparatively clean, thus permitting the vessel to maintain her designed speed with a minimum consumption of coal. The docking expenses, whether at home or abroad, and the cost of fuel are two very serious outlays that these vessels are counted upon to minimize, while their activity, range of action and general efficiency are greatly increased. The character of the service for which these gunboats are particularly designed requires that they be exposed to musketry fire, and the housing of the major part of the battery by an unbroken deck, besides adding materially to the stiffness and strength of the vessels, gives admirable protection to the guns' crews in action.

The necessarily exposed position of the bow and stern guns is justified only by their arc of fire and possible usefulness in a running action; while for river service, for which these boats are particularly fitted, the disposition of the gun-deck battery is all that could be desired.

Lake Freight Matters.

After a reaction caused by pig iron prices and lake freights being advanced somewhat beyond reasonable limits, the freight market is again assuming a firm tone and pig iron is also stronger at present than it has been at any time within two weeks past. It is true, however, that the bulge to \$1.75 a ton on ore from the head of the lakes was the means of ore dealers making arrangements with furnace men for extensions and postponements that will make considerable difference in the season's shipments. Some sales that might have been made were also cut off by the high freights, but the demand for ore is such that business is certain to continue very active until the close, and there is little doubt of a shortage in Bessemer ores before spring.

These conditions in the iron business, coupled with a heavy movement of wheat and prospects of immense stocks of corn seeking storage in vessels during the winter and shipment early next season, have elevated the ideas of vessel owners, so that \$1.25 is talked of as the contract rate on ore from the head of Lake Superior for 1896, but the situation is such that next season's business can not as yet be taken in hand. All interests are too far apart on prices. Ore freights at this writing are active at \$1.60 from the head of the lakes, \$1.25 from Marquette and \$1.10 from Escanaba to Ohio ports, with grain rates based on 5 cents for wheat from Duluth to Buffalo.

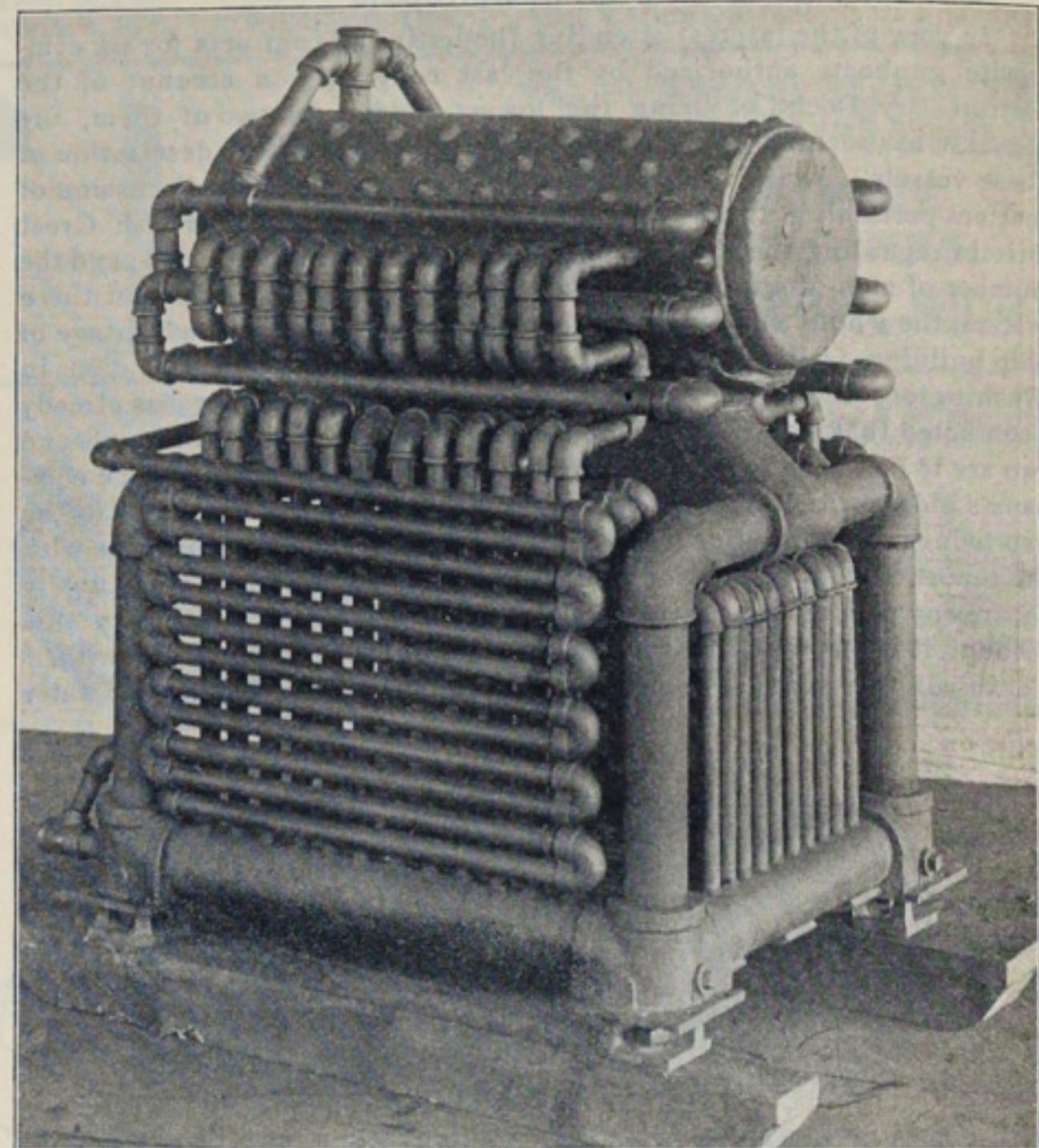
Jurisdiction of States Bordering on Lake Michigan.

Lake Michigan, unlike other bodies of water in the chain of great lakes, is entirely within United States territory, and on this account particularly a decision handed down in the United States circuit court of appeals, Chicago, a few days ago is specially interesting. The court declares that the jurisdiction of the states bordering on Lake Michigan extends to the middle of the lake, in cases where there is no conflict with the admiralty laws of the United States. The opinion was in the appeal case of Anson A. Bigelow, the owner of the steamer Robert Holland. On Nov. 1, 1891, Erik Anderson was killed in a collision between the barge Parana, in tow of the Holland, and the schooner William Aldrich. The collision occurred six miles from the Wisconsin shore. There is no statute of the United States covering death occurring in such a manner and the administrator of Anderson's estate brought suit in the United States court under the statutes of Wisconsin.

Judge Jenkins hands down the opinion of the court affirming judgment of the court below in awarding damages to Anderson's estate, Judge Woods agreeing and Judge Showalter dissenting. Judge Jenkins, after referring to the absence of a federal statute covering the case, says: "The question still remains open and undecided by the supreme court of the United States whether the jurisdiction of a state bordering upon one of the great lakes extends beyond the low water mark; whether the doctrine of the three-mile belt, recognized in the case of oceans, may be applied to the great lakes, and whether state jurisdiction with respect to such lakes is coextensive with the boundary line of the state when one of its lines is declared to be a line running through the middle of the lake. We think it must be conceded that Lake Michigan is not a high sea, in the sense that it is 'open and uninclosed and not under the exclusive control of any nation or people, but it is the free highway of adjoining nations and people,' to use the language employed by Mr. Justice Gray. The lake lies wholly within the territory of, and, as respects foreign nations, is under the exclusive dominion of the United States. If we may indulge in the expression, it is not 'no man's land.' It is not, by nature, free to the commerce of the world. It is so free only by the grace of the government. It is included within the territorial boundaries of four states. We are therefore of the opinion that the surrounding states, within the limits prescribed in their respective organic acts, have sovereign rights in and over the navigable waters of Lake Michigan."

Willard Water Tube Boiler.

The engraving herewith shows the Willard water tube boiler. The chief claims made for it are that the releasing surface is brought into close relation with the steam generating surface, which overcomes the violent fluctuations of the water level common to some boilers of this class, caused by the steam generated having to force its way through 30 or 40 feet of piping of small diameter. Ample accommodation is made



for the water space. Special extra thick steel pipe is used, the process of manufacture being similar to the manner in which wire is drawn, thus doing away with all traces of weld and making it seamless. The rear of the boiler consists of a wall of water-filled pipes and the entire casing is asbestos filled. Circulation is said to be especially effective and there are a number of other advantageous features in the generator that are fully described and shown by illustrations in a circular which will be mailed to any address by the builders, Chas. P. Willard & Co., No. 197 So. Canal street, Chicago.

The use of oil to reduce the effect of waves in a storm has met with favor among salt water navigators, but only in isolated cases has any use been made of it on the lakes. An example was furnished in the foundering of the schooner E. R. Williams. Capt. Huntoon says that after leaving the schooner in the yawl, cups full of oil were thrown out whenever a very large wave was encountered, and he claims that if this had not been done the yawl would have foundered. Thus it will be seen that on the lakes also the use of oil has at least proven of some practical value. A simple but very effective device for distributing oil is sold with a barrel of the fluid for \$10, by the Storm Oil Bag Co., 123 River street, Cleveland.

Within a few days the navy department will issue plans and specifications for the two prospective battle ships. There are five firms who will be supplied with these papers—Cramp & Sons, Union Iron Works, Newport News Ship Building and Dry Dock Co., Bath Iron Works and the Columbian Iron Works. The engineer-in-chief pleaded for 11,000 horse power, but the department has cut him down to 10,000 horse power. The machinery will be slightly smaller in many respects than that of the battleship Iowa, now under construction, but will be very similar to it.

The Penberthy Injector Co., Detroit, Mich., write us that in visiting the Missouri state fair, held recently at St. Louis, they found nineteen manufacturers of traction and farm engines with forty engines on the grounds. In looking over these engines they found the Penberthy injector on thirty-three of them the other seven having five different makes. They also state that two manufacturers out of those representing the seven engines not fitted with Penberthy injectors agreed to adopt that type of injector for 1896.

Commander Dayton of the ninth light-house district, Chicago, gives notice that the red third-class can buoy, marking the northeast end of Sheboygan reef, which was carried away a short time ago, has been replaced.

Ship Yard Matters.

F. W. Wheeler & Co's plans for alterations that will admit of two additional berths for 400-foot ships on a big slip to be constructed in the portion of the West Bay City ship yard that was formerly devoted to the construction of wooden vessels, are very probably based on new contracts which are now being closed up. It is understood that in addition to the four big steel steamers which Mr. Wheeler now has under way, he is about to close negotiations with the owners of the wooden steamer Bielman for a steel consort, and he has also about completed arrangements for a steel car transfer steamer, regarding which, full information will be given out shortly.

Notwithstanding all statements to the contrary, it is certain that the Goodrich Transportation Co. of Chicago will build a wooden steamer this winter for the Chicago-Milwaukee service, in accordance with plans drawn up some time ago. President Coodrich also has under consideration just now the matter of rebuilding the steamer Menominee. Plans for the new boat call for a steamer of 207 feet keel, 225 feet over all, 36 feet beam without guards and 17 feet moulded depth. The vessel will be sheathed and stoutly planked forward, as she is intended for winter service, and she will have three steel arches on either side running over the gangways and extending to the promenade deck. The form of hull construction will be similar to that followed in wooden gunboats. The ship will have berth accommodations for about 224 passengers and a crew of seventy, without resorting to the practice of using pull-out berths in the cabins.

All of the ship yards will be crowded with repair work during the winter. Two important jobs to be carried out by the Detroit Dry Dock Co. will be the lengthening of the steamers Fayette Brown and E. M. Peck, owned by the Northwestern Transportation Co. of Detroit. These vessels are each 252 feet keel. It is proposed to add 50 feet to the length, by putting the boats in dock and taking them apart amidships. They will, of course, be strengthened accordingly. The Detroit company will also equip the steamer City of Marquette with new engines and a new boiler during the winter.

An excursion company of Jamestown, N. Y., which operates small pleasure boats on Lake Chautauqua, has contracted with the Marine Iron Works of Chicago for two flush deck steam vessels 51 feet long and 10 feet beam. The arrangement of engine house, toilet room, etc., is attractive and convenient, and yet there is deck room on each of the vessels admitting of seventy-five passengers being carried comfortably and safely. The vessels will be carried from Chicago to Jamestown, a distance of full 500 miles, on railway cars so constructed as to be equivalent to six ordinary flat cars.

Officials of the Wisconsin & Michigan railroad, for whom James Davidson recently built two car carrying barges, are planning for the construction of two more barges and a powerful tug to tow them next season on Lake Michigan.

Tests of Zenith City and Victory.

Chief Engineer James Perry and Passed Assistant Engineer Benjamin C. Bryan of the bureau of steam engineering, navy department, are now in Chicago, and will board the 400-foot steel ore carrier Victory tomorrow (Friday) for a trip to the head of Lake Superior, making observations of the operation of her Scotch boilers and triple expansion engines under ordinary working conditions. These officers, who are representing the navy department in this work, arrived in Chicago on Wednesday from Duluth, where they left the steamer Zenith City after having made a trip on her up the lakes from Buffalo. It is well known, of course, that the Zenith City and Victory are practically duplicate ships, excepting that the former has water tube boilers of the Babcock & Wilcox type, while the latter is fitted with Scotch boilers. In both cases the tests will represent the performance of the vessels in water ballast, as the Zenith City took no cargo from Buffalo and the Victory goes light from Chicago. Owners of the two vessels have afforded the naval officers every opportunity to make complete tests, and it is to be hoped that nothing will prevent them from submitting a very full report regarding the merits of the two types of boilers in lake freight steamers, as these tests have been looked to with a great deal of interest for some time past.

On her last trip down the lakes with a cargo of 140,000 bushels of wheat, the Zenith City is reported to have averaged 11.8 miles an hour for the entire run, Duluth to Buffalo, and to have burned only ninety-eight tons of fuel.

What to do with the Columbus.

At recent meetings of those of the stockholders of the American Steel Barge Company who control the whaleback passenger steamer Christopher Columbus, which was built for world's fair service, propositions to purchase the vessel have been under consideration. One proposal was from New York parties who intended putting the boat in service in New York harbor or up the Hudson river, while another contemplated using her on the Delaware river. In order to send the vessel to

the coast, it would be necessary to cut her in two for passage through the St. Lawrence canals, and even this plan of moving her to tidewater involves some unusual difficulties, as her machinery is located amidship. But in view of the prospects of a profitable business being found for the ship in the east, Capt. McDougall is now making a trip along the St. Lawrence canals and is collecting such information as will be required if the Columbus is to be taken from the lakes to the seaboard. Owners of the steamer have also considered the question of dismantling her and putting her into the ore trade towing two barges. The Columbus would carry about 2,000 tons of ore.

Ballard's Reef and Point au Pelee.

At two points on the lakes—Ballard's reef in the Detroit river and Point au Pelee, Lake Erie—several very serious accidents, involving heavy loss, have occurred of late, and it has been found that the trouble is due to the fact that masters are not fully acquainted with the channels at these points. All of the accidents above the Lime-Kiln cut, Detroit river, where vessels have struck boulders that have been thrown up by the dredges working in that vicinity, may be charged to the practice of masters insisting upon holding their vessels fast to the Grosse Isle ranges when coming down with heavy loads, instead of going to the westward of the ranges, where the dredges have quit work and where there is a clear channel of full 17 feet at normal stage of water. This deep channel west of the center line of the Grosse Isle ranges, has now been marked on its extreme western side by six black spar buoys which will carry red lights at night. This has been done through the efforts of Capt. McKay of the Lake Carriers' Association, who went over the work a few days ago with the Messrs. Kallman, engineers in charge. If vessel masters will now keep the upper Grosse Isle ranges a trifle open to the westward, and remain within bounds of the black buoys by day and red lights by night, until the lower stake or lower red light is reached, and then take up again the Grosse Isle ranges for entering the Lime-Kiln cut, they will find no difficulty in making the passage, excepting at times when the water is very low. It is necessary to run under check in making this passage, and under no circumstances should vessels go to the eastward of the two red stakes, which will also be noted while running on the Grosse Isle ranges, as there is a very dangerous obstruction in that vicinity. White lights east of the red stakes are the dredging contractor's lights and must be avoided, as they mark a part of the channel in which there is less than 14 feet of water. It has been decided to place a red flag on Mullen & Gatfield's coal dock by day and a red light by night when the water is low for vessels of Lake Michigan draft. If the stage of water is still lower, so that it is dangerous for vessels of Lake Superior draft, two red flags, one over the other, will be placed on the coal dock by day, and two red lights in similar position, will be shown by night.

All of the strandings and heavy losses in shoal water to the eastward and southward of Point au Pelee, Lake Erie, where the schooner M. W. Paige, steamer Presley and other vessels have struck or stranded, have been due to masters gradually running farther north and east than they had been in the habit of doing in the past, before shaping a course down the lakes. There is considerable foul water generally in this vicinity, however, and an effort will be made by Capt. McKay and other officers of the Lake Carriers' Association to induce the Canadian government to mark the place with a light-ship, gas buoy, or even a large nun buoy if nothing better is to be had. The Canadian officials will also be consulted regarding the advisability of discontinuing the present light on Pelee island and establishing a new light on the north end of the middle ground in Pelee passage. A light on the extreme north of this middle ground would mark definitely the shoal water which vessel masters have tried to avoid but have grounded to the southward and eastward of Pelee point in doing so. It is proposed also to ask the Canadian government to move the life saving station from Pelee island to Pelee point on the main land. The life saving station on the island has been in operation for ten years, but the crew has seldom or ever been to a wreck in all that time. When the schooner M. W. Paige was ashore east of the point a few days ago, with crew in great danger, the life savers on the island were unable to see the wreck or render any assistance, although they were only a few miles from the scene of the accident.

Another dangerous shoal in this part of Lake Erie to which the attention of the Canadian government will be directed is Little's point, opposite Colchester, where the steel steamer Vega struck and encountered delay and heavy loss a few days ago, and where the steamer Corsica met with a similar fate a year or more ago. The Canadian officials will be asked to station a light-ship or gas buoy at this point or to mark it in the best way possible.

Low rates are offered to points in Michigan and Wisconsin account hunters' excursions. Ask agents of the Nickel Plate road for detailed information.

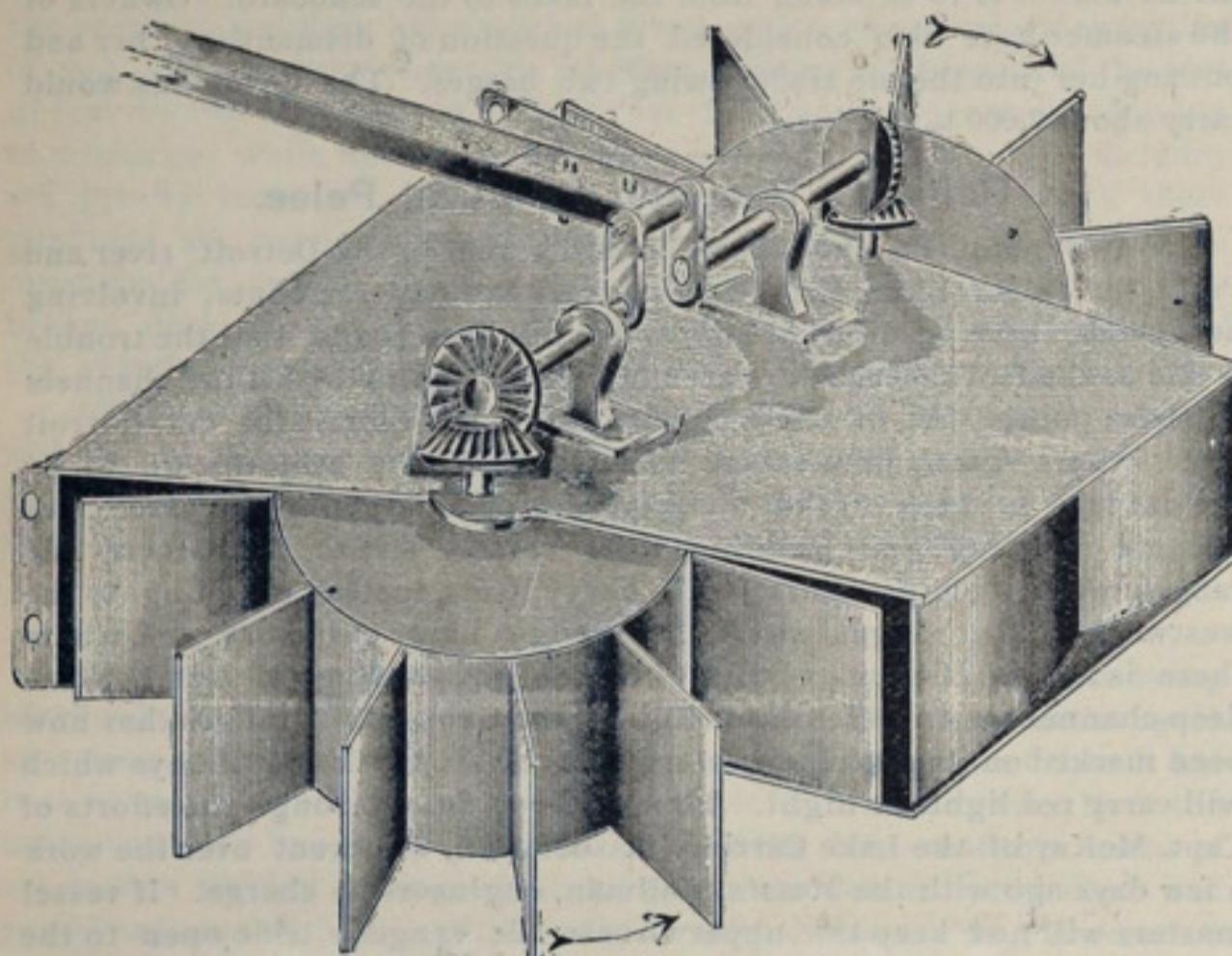
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Ask agents of the Nickel Plate road about hunters' rates to Michigan and Wisconsin. Tickets on sale until Nov. 15.

423-14

Interlocking Turn-Wheel Propeller.

The propeller represented herewith is the adaptation in a modified form of the side wheels of a steamer to the stern. The stroke of the blades or paddles is direct, and therefore more powerful and effective, it is claimed, than the screw, while the number of revolutions for the same speed is much less. For canal and river navigation the propeller is



specially adapted. By an arrangement in the propeller the current created by the motion of the wheels is made to converge toward the center of the wake of the vessel, thus avoiding any washing against the banks, and as the motion is necessarily slower than that of the screw, there is much less disturbance of the water.

Some advantages claimed for the invention are: Wheels entirely submerged, and thus suited to sea-going craft; no large wheel houses taking up valuable space and no tremulous motion to the ship; crank motion in line with the movement of the ship, and consequently no throbbing as in screw ships; propeller can be built up in large ships in sections from the keel to the water line, and along the keel from the bow to the stern, and can be run by one or more engines.

A working model, designed for a 30-foot launch, can be seen at Messrs. Arthur & Co., Nos. 188 and 190 Front street, New York.

Around the Lakes.

An advertisement from the light-house board elsewhere in this issue calls for proposals for the construction of a composite light vessel.

Tonnage of the steel lumber steamer Katahdin, owned by H. W. McCormick of Bay City and built by F. W. Wheeler & Co., is 1,380.79 gross and 1,103.27 net. Her official number is 161,078.

An error was made in announcing the signals to be given out from the fog signal station at Seul Choix point, Lake Michigan. This signal will be distinguished by blasts of four seconds duration separated by silent intervals of twenty-six seconds.

In May of last year the Hawgood & Avery steamer S. S. Curry was injured by collision in the Sault river with the whaleback steamer Thomson, and now her owners have brought suit against the whaleback to recover damages to the amount of \$13,014.35.

As a result of a suggestion made some time ago by the REVIEW, the hydrographic office has been at work on a table of sailing distances between ports on the lakes. We are informed that the distances are now tabulated and the publication will be issued shortly.

Citizens of Mackinaw have voted to bond their town to the extent of \$6,000 for the purpose of constructing a dry dock in order to build up a business in vessel repairs. The amount noted would not go very far in the building of a dry dock but it might be offered as a bonus to some private concern that would make a much larger expenditure.

Roberts water tube boilers, made specially for the steamer Unique, are being put into the boat at Detroit. Mr. C. McElroy, owner of the Unique, has certainly met with many set-backs and annoying delays in his efforts to bring about a fast river service between Detroit and Port Huron, and the perseverance he has shown in the matter is alone deserving of success.

Vessel masters who may have occasion to take on fuel at Detour will do well to avoid a shoal spot just above Pipe island and almost abreast of Pickands, Mather & Co's dock, where the steamer Colgate Hoyt stranded several days ago and was put to considerable expense in lightening a part of her cargo. A temporary stake now marks the spot, and Commander Mead of the light-house service has been requested to put a buoy

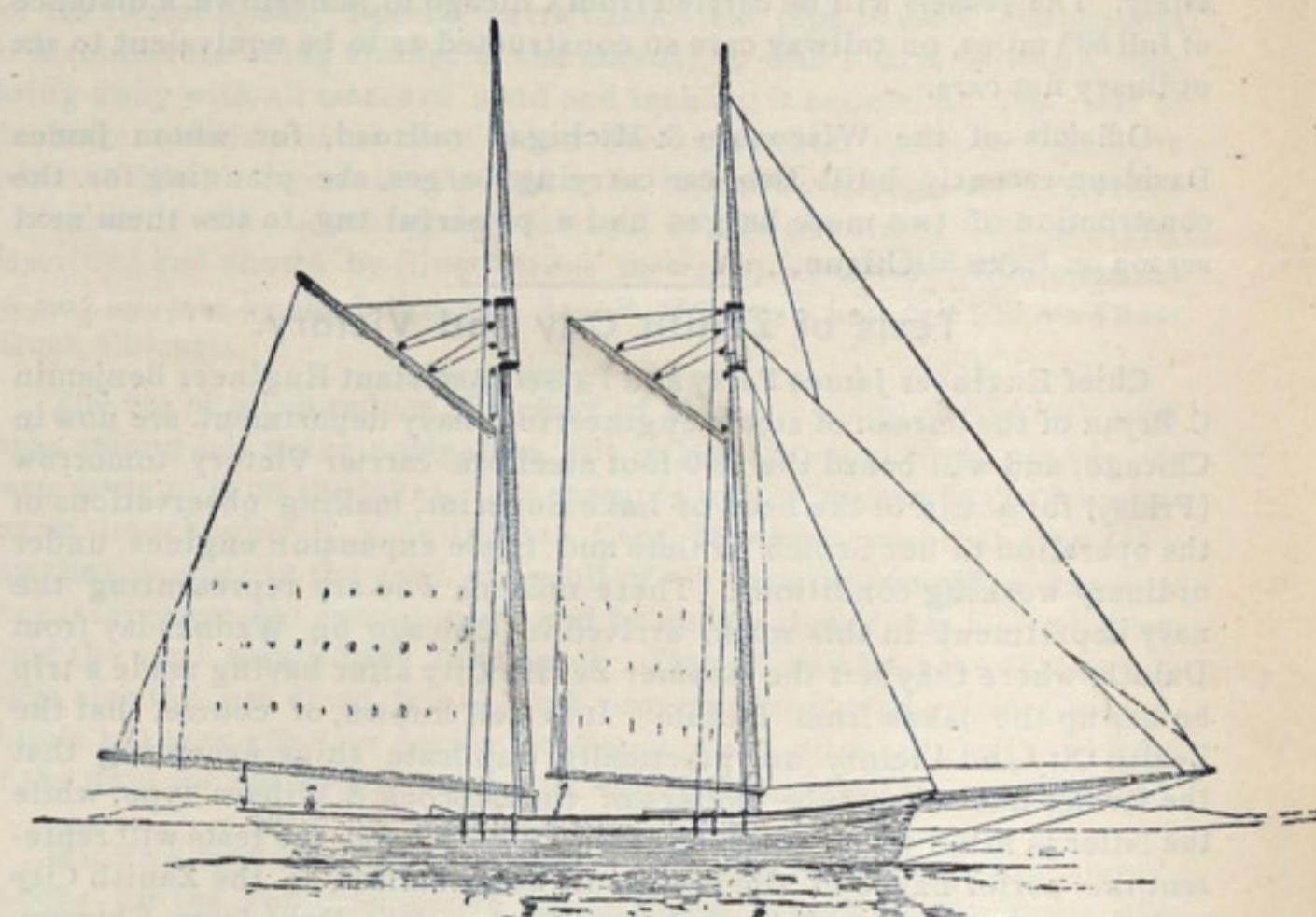
on it. It was thought that there was fully five fathoms of water all through the bay in this vicinity, but the shoal found by the Hoyt has only 14 feet of water over it and is 150 to 200 feet in length and of about the same width.

When it was stated in last week's issue of the REVIEW that the Granada was the largest wooden consort in the world, dimensions of other lake consorts were not fully taken into account. So far as known, the Yukon, owned by Capt. Thos. Wilson of Cleveland has that honor. She is 250 feet keel, 285 feet over all, 42 feet beam and 20 feet deep. She was built by F. W. Wheeler & Co., West Bay City.

Although Judge Nelson of the United States district court, Duluth, has refused to allow a demurrage claim made by the owners of the steamers Gilbert and Gratwick, for a delay of fourteen days to which their boats were subjected during the coal handlers strike at the head of the lakes in July, 1894, the owners of these vessels propose to appeal the case, as they are still of the opinion that the coal dealers did not exercise due diligence in the matter.

A note in one of the Detroit papers says that the announcement that the steel steamer to be built by the Detroit Dry Dock Co. for Capt. E. M. Peck and others is to be called Gen. O. M. Poe is a little premature. This may be true, but it is well known, nevertheless, that Capt. Peck's regard for Gen. Poe was such as to warrant his doing something to perpetuate the memory of the famous engineer. Capt. Peck was one of the originators of the plans for a memorial to Gen. Poe at Sault Ste. Marie.

The writer of the following letter of inquiry, received a few days ago by the MARINE REVIEW, will undoubtedly prove a valuable employee in the office of the vessel owners with whom he is engaged: "I would like to put in some of my spare time in studying and learning the names of different parts of a vessel. I am employed in the office of a firm of vessel owners here, and I am anxious to become acquainted with the different terms used in regard to vessels, so that I can talk intelligently of matters pertaining to construction, repairs, etc. I have been employed by this firm for nearly a year and have become very much interested in the business, and if you will kindly give me any information you may have in regard to some good book on this subject I will be greatly obliged to you." Of course the best book to recommend to this young man is Patterson's Nautical Dictionary, which is sold by the MARINE REVIEW at \$5. There are many young men employed in offices around the lakes who would do well to follow his example.



SIXTY-FOOT SCHOONER YACHT BEING BUILT BY MURPHY & MILLER, CLEVELAND, FOR LEWIS COWLES.

Marine Calendars.

It is believed that concerns doing business on the lakes will appreciate a line of first-class marine calendars, with views of some of the handsomest lake steamers, engraved in an artistic way, more than some imaginary view or picture that has nothing to do with marine affairs. The MARINE REVIEW, has made preparations to publish a line of such calendars. Last year we published the handsomest marine calendars put out by any lake business house. If you are thinking of doing some advertising in this line for 1896, write us, giving the number of calendars wanted, what illustration or steamer or vessel picture you desire, and we will send you samples. The correspondence will be simplified if you will state the amount you would appropriate for this purpose. We can reproduce in colors any marine scene that is desired. Write the MARINE REVIEW, 516 Perry-Payne Bldg., Cleveland, O.

Approximate Annual Value of Lake Commerce.

The Bradstreets mercantile agency, which publishes a commercial journal of high standing, wired the MARINE REVIEW a few days ago, asking for the "approximate total annual value of the commerce of the great lakes." The answer to this inquiry will very probably prove interesting to our own readers as well as the readers of the New York journal. We invite criticism or discussion that may be suggested by it. Here it is:

"Regulations governing coastwise commerce on the lakes permit, in some cases, of vessels taking on and delivering cargoes of which no record is kept by customs officials, and on this account there is not now and has not been for a great number of years past anything in the way of statistics, absolutely reliable, regarding the entire freight movement throughout all the lakes. It is quite safe to estimate, however, from what is known of St. Mary's Falls canal traffic, and from figures prepared some time ago by the bureau of statistics, treasury department, that freight moved on the lakes this season will aggregate 40,000,000 net tons. No estimate based on any reliable method of figuring has ever been made of the value of this freight, but from what is known of the amounts of ore, grain coal and lumber involved, the editor of the MARINE REVIEW makes a rough estimate of \$320,000,000 as the value of freight carried in 1895. This has no reference to ships, terminals, carrying charges, etc. It is simply the value of different commodities delivered at various points."

Affairs of Lake Carriers' Association in Washington.

In a letter to Cleveland officials of the Lake Carriers' Association, Secretary Keep writes as follows regarding his visit to Washington with President Livingstone:

"We went over our list of new aids to navigation with the light-house board. The naval secretary was absent but Admiral Walker, chairman, and Captain Willis, engineer secretary, were there. We also urged Secretary Carlisle to treat the light-house board's recommendations for the lakes liberally in his estimates. You will be glad to learn that the board has abandoned its classification of lights recommended as "indispensable," "necessary," etc. Instead, they recommend for each district, two classes of needed aids—fixed and floating. Each class for each district will be named by the board in the order of their importance. We saw Secretary Lamont and Col. Craighill, chief of army engineers, and talked over with them the matter of widening the Lime Kiln cut, the St. Clair flats canal and the channels of St. Mary's river. Secretary Carlisle referred to his trip on the lakes and told us he had been much impressed by the need of regulating the rafts, and said his department would co-operate strongly with us in obtaining relief. Officials of the treasury department also promised to take up the matter of clearances at the Mesabi dock, Duluth, and if the Duluth collector of customs will recommend a deputy at the dock to issue clearances, it is probable that we will have no trouble in settling that matter."

Canadian Sault Canal Traffic.

There is presented herewith a statement of commerce, east and west bound, through the Canadian Sault canal from Sept. 9, the date of opening, to and including Sept. 30. It will be necessary in the future to combine the statements of the two canals at the Sault in order to show from month to month the full volume of Lake Superior business.

STATEMENT OF COMMERCE THROUGH CANADIAN SAULT CANAL FROM SEPT. 9 TO SEPT. 30, 1895, INCLUSIVE.

EAST BOUND.

Copper, net tons.....	100
Iron ore, net tons.....	101,786
Iron, pig, net tons.....	300
Wheat, bushels.....	1,416,963
Grain, other than wheat.....	132,000
Lumber, M feet B. M.....	8,862
Flour, barrels.....	47,280
Unclassified freight, net tons.....	4,699
Passengers, number.....	1,278

WEST BOUND.

Coal, bituminous, net tons.....	59,693
Coal, anthracite, net tons.....	6,800
Iron, manufactured, net tons.....	728
Salt, barrels.....	3,110
Unclassified freight, net tons	7,924
Passengers, number.....	1,077

Cargo and Speed Records of Lake Freight Vessels.

Each week brings reports of new cargo records made by the 400-foot ships. The Zenith City has just loaded 141,000 bushels of wheat at Duluth on the Lake Superior draft of little more than 14 feet, and the Corrigan barge Aurania has delivered 4,402 net tons of ore on the same draft. Other changes are noted in the list that follows:

Iron ore—S. S. Curry, Hawgood & Avery Transit Co. of Cleveland,

4,569 gross or 5,117 net tons, Escanaba to South Chicago; Maritana, Minnesota Steamship Co. of Cleveland, 4,260 gross or 4,771 net tons, Escanaba to South Chicago; Selwyn Eddy, Eddy Bros. of Bay City, Mich., 3,897 gross or 4,364 net tons, Escanaba to Ashtabula. Lake Superior cargoes—Schooner Aurania, John Corrigan of Cleveland, 3,931 gross or 4,402 net tons, Ashland to Cleveland on 14 feet 4 inches draft; steamer Victory, Interlake Co. of Cleveland, 3,689 gross or 4,132 net tons, Two Harbors to Cleveland on draft of 14 feet 3 inches.

Grain—Selwyn Eddy, Eddy Transportation Co. of Bay City, 130,820 bushels of wheat, Detroit to Buffalo; Centurion, Hopkins Steamship Co. of St. Clair, Mich., 152,000 bushels of corn, Chicago to Buffalo; Yale, R. R. Rhodes of Cleveland, 168,500 bushels of oats and 59,800 bushels of corn, equal to 4,370 net tons, Chicago to Buffalo; S. S. Curry, Hawgood & Avery Transit Co. of Cleveland, 246,673 bushels of oats, equal to 3,947 net tons, Chicago to Buffalo. Lake Superior cargoes—Zenith City, Zenith Transit Co. of Duluth, 141,000 bushels of wheat, Duluth to Buffalo on draft of 14 feet 3 inches.

Coal—S. S. Curry, Hawgood & Avery Transit Co. of Cleveland, 4,535 net tons bituminous, Conneaut to Gladstone; Selwyn Eddy, Eddy Bros. of Bay City, Mich., 4,252 net tons anthracite, Buffalo to Milwaukee.

Speed—Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 45 hours and 16 minutes, 16.4 miles an hour; Centurion, Hopkins Steamship Co. of St. Clair, Mich., Buffalo to Duluth, 997 miles, 67 hours and 50 minutes, 14.7 miles an hour.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on Oct. 19, 1895:

	Wheat, bushels.	Corn, bushels.
Chicago.....	16,313,000	2,074,000
Duluth.....	5,829,000
Milwaukee.....	516,000
Detroit.....	525,000	33,000
Toledo	1,000,000	270,000
Buffalo.....	1,741,000	704,000
Total.....	25,924,000	3,081,000

As compared with a week ago, the above figures show at the several points named an increase of 905,000 bushels of wheat and a decrease of 253,000 bushels of corn.

"When I hear a vessel condemned on account of a general belief that she is weak" said Mr. Henry Hawgood of Cleveland, a few days ago, "I am reminded that a great many lake vessels, which were hastily constructed, have lived out, even in my time, some of the strongest ships that were ever put together. Of course we must conclude that such vessels have never been caught under the conditions that would be most likely to prove disastrous to them. Twenty-three years ago, the fall of 1872, I was in the tug Moore, towing lumber barges between Bay City and Tonawanda. While we were making a trip to Tonawanda, which required nineteen days, the barge J. A. McDougall was constructed at Bay City. We were just nineteen days on the trip, and although nothing had been done on the vessel before we left, she was built and loaded with 600,000 feet of lumber upon our return. Everybody said 'there is a coffin to go out and sink a crew,' but the McDougal is still in commission, carrying lumber in the same trade, and for all any of us know at present she may be destined to continue in the business for a great many years to come."

Chauncey N. Depew is thus quoted regarding the internal commerce of the United States: "The whole of the tonnage on the oceans of the world last year was about 140,000,000 tons, while the tonnage of the railways of the world carried 100 miles, was about 1,400,000,000 tons. There are 400,000 miles of railroad in the world, of which 180,000 are in the United States. Of the 1,400,000,000 tons carried 100 miles last year on the railways of the world, 800,000,000 tons were carried on the railways of the United States. You take the 600,000,000 tons carried 100 miles on the railways of the world outside of the United States, and then you add to it 140,000,000 carried on the ocean in the commerce of the world upon the seas, and we still have in the 800,000,000 tons carried on the railways of the United States 60,000,000 tons more than on all railways of the world outside of the United States, and in all the ocean commerce of the world put together. This internal commerce of the United States makes it the most wonderful market on the globe."

Iron mining companies, railroad companies controlling upper lake ore shipping docks, and others interested in small cars of any kind, will receive a catalogue describing various types of these cars, by addressing the Sheffield Car Co., Three Rivers, Mich.



DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O.
SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each.
Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department on June 30, 1895, contained the names of 3,342 vessels, of 1,241,459.14 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1894, was 359 and their aggregate gross tonnage 634,467.84; the number of vessels of this class owned in all other parts of the country on the same date was 316 and their tonnage 642,642.50, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1895, was as follows:

Class.	Number.	Gross
Steam vessels.....	1,755	857,735.00
Sailing vessels.....	1,100	300,642.00
Unrigged.....	487	83,082.00
Total.....	3,342	1,241,459.00

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30,	Number.	Net Tonnage.
1891.....	204	111,856.45
" " 1892.....	169	45,168.98
" " 1893.....	175	99,271.24
" " 1894.....	106	41,984.61
" " 1895.....	93	36,353.00
Total.....	747	334,634.28

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.
(From Official Reports of Canal Officers.)

No. vessel pass'ges	St. Mary's Falls Canal.			Suez Canal.		
	1894.	1893.	1892.	1894.	1893.	1892.
T'n'ge, net regis'td	14,491	12,008	12,580	3,352	3,341	3,559
Days of Navigat'n	13,110,366	9,849,754	10,647,203	8,039,106	7,659,068	7,712,028

Entered at Cleveland Post Office as Second-class Mail Matter.

IT IS WELL known that while they were in Washington recently, President Livingstone and Secretary Keep of the Lake Carriers' Association had a conference with Secretary Lamont and Chief-of-Engineers Craighill of the war department on the subject of the appointment of a successor for the late Gen. Poe. As the chief officer of the organized vessel owners of the lakes, Mr. Livingstone was asked to suggest the name of some member of the engineer corps whose appointment would be pleasing to the vessel interests. There has been no official announcement as to the choice made by Mr. Livingstone, but it is understood from very good authority that he named Major Adams, who was Gen. Casey's assistant, and Col. Wm. Ludlow, who was up to a short time ago the engineer officer of the American legation in England, and who is now serving as the senior officer of the commission appointed by the president, in accordance with an act of the last congress, to investigate and report upon the Nicaragua canal project. Col. Ludlow's services on the lakes and his experience with the light-house board a few years ago are matters that are fully understood by members of the Lake Carriers' Association. Although this courtesy was extended to the Lake Carriers' Association, through Mr. Livingstone, it is not probable, however, that either of the officers named will succeed Gen. Poe. Reliable information from Washington is to the effect that, although the position made vacant by the death of Gen. Poe may not be filled for some time to come, the engineer officer who now seems to have the call on the place is Col. Mansfield, at present in charge of harbor works at Boston. Col. Mansfield was at one time stationed in Detroit.

ANDREW CARNEGIE, whose iron interests—the greatest of any individual in the world—are all in and around Pittsburg, finally admits that that city is no longer the natural iron-center. The quantity of iron ore used in the manufacture of a ton of steel or iron is now far greater than the fuel used and for this reason, mainly, he admits that the shore of Lake Erie is the most advantageous section for the manufacture of steel and iron products. The late George H. Ely and other Cleveland men who possessed a full knowledge of the Lake Superior ore business and the iron business generally predicted ten years ago just such conditions as Mr. Carnegie speaks of in a lengthy interview published a few days ago. There is no doubt of the iron business finally drifting to points on

Lake Erie where the ore can be unloaded from vessels at furnace doors. Pittsburg's talk of a ship-canal that is entirely impracticable is like unto the drowning man grasping at a straw. Furnace plants and mills can not be ripped up in a day, but the change is sure to come in time, and Mr. Carnegie would certainly be the last to admit it if he did not realize the absolute certainty of it.

A DESCRIPTION of the United States gunboats, for the construction of which the Detroit Dry Dock Co. was the lowest bidder, appears elsewhere in this issue. It was hoped that the REVIEW would be able to announce some arrangement between the Detroit builders and the navy department whereby the contract for two of these vessels would go to Detroit, but it would seem that disadvantages in carrying out the scheme of building the various parts of the vessels and their machinery in Detroit and assembling them at a branch yard on Puget sound will probably prevent the dry dock company from securing the work. It is the old story of antiquated treaty relations with Great Britain standing in the way of a large share of naval work coming to the lakes. The Detroit people have not given up their effort as yet, however, and if nothing more is accomplished their bid will prove a strong object lesson in the next congress, when an effort is made to overcome the present stipulations of the treaty.

WE HAVE received from Callaghan & Co., Chicago, a treatise on the "Law of Marine Collisions," by Herbert R. Spencer of Duluth. The work gives the rules governing the navigation of vessels on the high seas and the inland waters of the United States, and treats of the principles governing their application in cases involving collisions and the general principles governing the liability of parties to collisions. It is a volume of about 500 pages. As it is the first American treatise on the subject, and as the author is quite well known on the lakes, more extended reference to it is reserved until a careful examination of the book is made.

IF THE claims of underwriters regarding losses during the present season are to be taken as entirely in accordance with the facts, there is little doubt of a marked advance in insurance rates next season. General agents are telling stories that are probably intended to pave the way for an advance. It is said that companies represented by the house of Smith, Davis & Co., Buffalo, have already lost half a million on this season's business.

THE ADMINISTRATION at Washington seems to have little regard for the dignified feelings of admirals in the navy. It was not necessary to burrow under the ground to find Admiral Meade when he was in active service, but he seems to have been buried rather deep since his retirement, a few months ago, and now another official high in command, Admiral Kirkland of the European naval station, has been detached under charges of interfering in European politics.

IT IS more than probable that the vessel interests will be called upon during the coming session of congress to again combat a strong effort to pass a Detroit river bridge bill. The right men should therefore be put on guard in the Lake Carriers' Association when new officers are elected shortly.

In General.

The model battleship Illinois, which was one of the objects of interest at the World's Columbian Exposition, and which cost \$115,000, is now in the possession of junk dealers who paid a few hundred dollars for it.

A Pacific coast steamer, the Sunol, is reported to have broken three blades of her wheel close to the boss, while of the fourth one only half remained, as a result of collision with a whale, and yet the ship was brought safely into port with her own power.

A big steel yacht, 234 feet over all, is to be built at the Erie Basin yard, Brooklyn, N. Y. The boat is said to be for Mr. Drexel of Philadelphia, although it was reported a short time ago that that gentleman had given a contract for a yacht to British builders.

The Thomsons, famous Clyde shipbuilders, recently completed seven gunboats for the Spanish government in three months of working days. The first of the seven vessels was completed within forty-five working days. The ships were intended for use in suppressing the rebellion in Cuba and despatch was the most important feature of the contract. Their displacement was 100 to 300 tons and the speed 12 to 13 knots.

Press despatches would indicate that all of the transatlantic companies are figuring on new passenger ships of great size. It is said that the North German Lloyd Co. has ordered from a Clyde firm two ships which are to be larger and more powerful than the Lucania and Campania, and that the Hamburg-American and White Star companies are also about to close negotiations for at least one ship each of similar proportions.

Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM LATEST PATENT OFFICE REPORTS.

546,712. Propeller. Paul F. Schmidt, Levallois-Perret, France. Filed Feb. 19, 1894. Serial No. 500,938. Patented in France Apr. 13, 1893, No. 229,351; in Belgium Oct. 10, 1893, No. 106,694; in Switzerland Oct. 10, 1893, No. 7,580, and in England Nov. 11, 1893, No. 21,510.

Claim. A compound propeller comprising a divided hub, the outer propeller having front and rear connection with the sections of said divided hub, and the inner propeller rotating between said hub sections and front and rear connections.

546,921. Arrowhead-Shaped Vessel. Mark Golinsky, St. George, Bermuda. Filed Nov. 26, 1894. Serial No. 530,055.

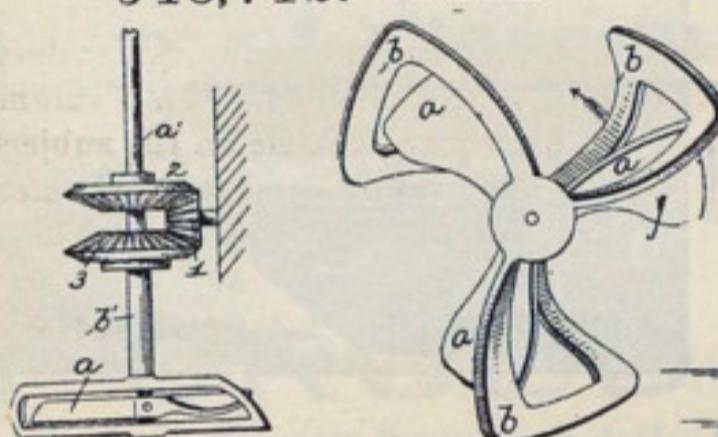
Claim. A hull for marine vessels, having an arrow shape as shown, that is to say the bow or front third of the length of the hull widening from the bow rearward and having its greatest width at its junction with the body of the hull, which is narrower at every point than the said bow.

547,137. Propelling Mechanism for Boats. Friedrich C. Bippes, Middletown, assignor of two-thirds to Christian Lang, Cincinnati, and Gustave Betz, Hamilton, Ohio. Filed July 17, 1893. Serial No. 480,776.

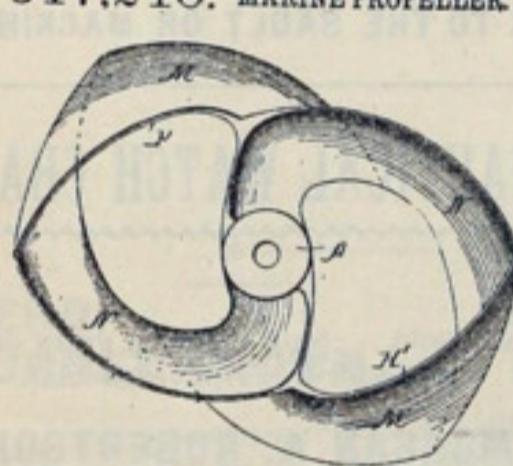
Claim. The combination with a driving shaft A, of the horizontal paddle beams, B', B², B³, provided with paddle blades C, the bent con-

546,921. ARROWHEAD-SHAPED VESSEL.

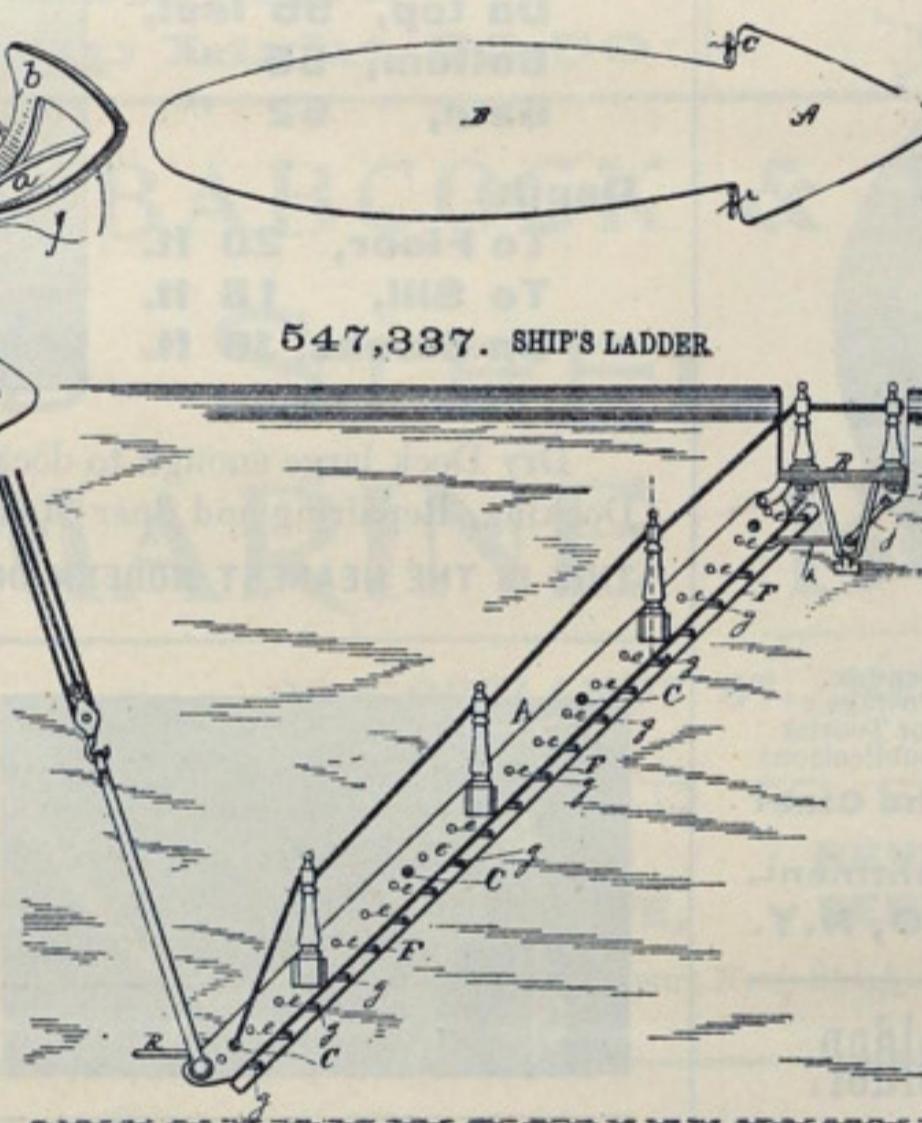
546,712. PROPELLER.



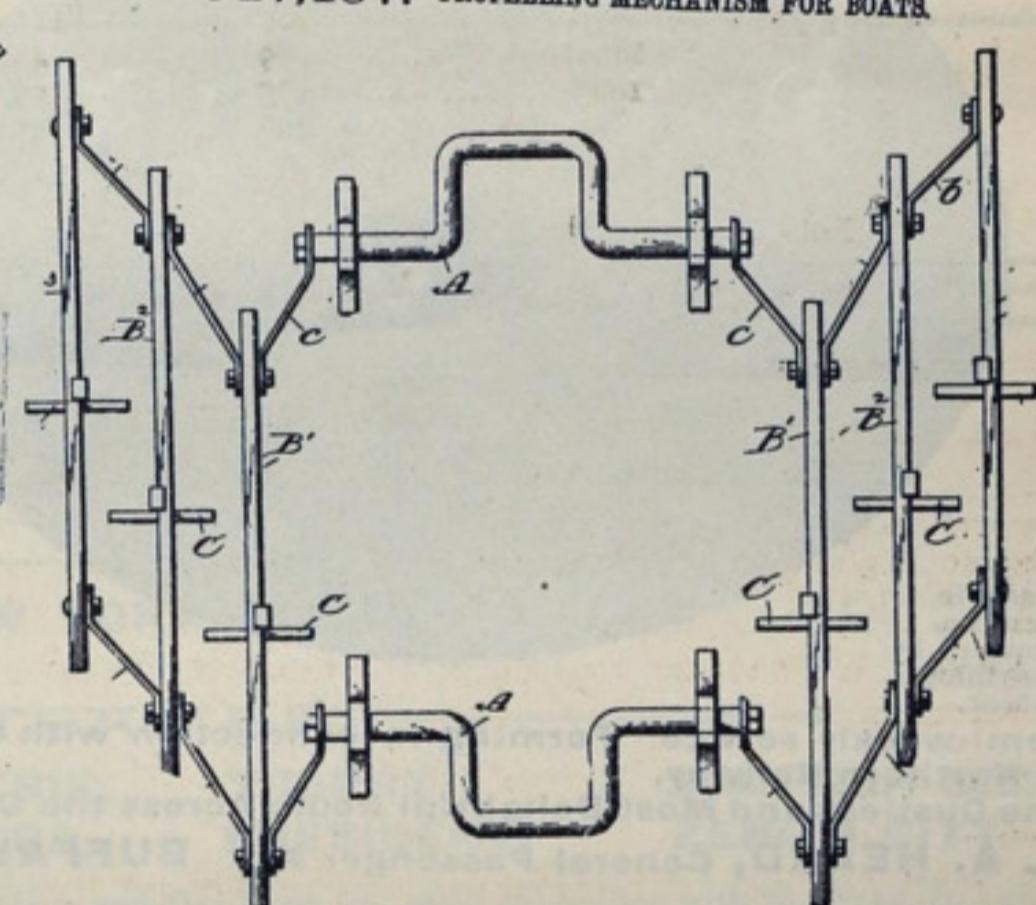
547,210. MARINE PROPELLER.



547,337. SHIP'S LADDER.



547,137. PROPELLING MECHANISM FOR BOATS.



necting arms a, b, c, secured to the paddle beams by means of the bolts d, provided with a cylindrical portion passing through said beams and rectangular portions passing through the said connecting levers, and the nuts d on each end of said bolts d, thereby rigidly connecting the said bent arms to form a crank shaft.

547,210. Marine Propeller. Hermann Haussmann, Chicago, Ill. Filed Sept. 27, 1893. Serial No. 486,639.

Claim. A propeller, the blades of which are in the form of involute spirals whose axes are parallel with, but eccentric to, the axis of the propeller shaft, one half of such blades being arranged at the reverse angle to the other half, with their outer ends intersecting and united, and all of said blades being straight in cross-section and decreasing in inclination or angularity, with relation to their respective axes, from their points of intersection to their butts.

547,337. Ship's Ladder. Maurice Deane, San Francisco, Cal. Filed Apr. 4, 1895. Serial No. 544,482.

Claim. In a ship's ladder, the combination of the pivotally hung ladder having the pivoted steps, the sliding rod or bar arranged below and extending the length of the ladder, the hinge strap or loops secured to said steps and having their arm-uniting portion passing through apertures in said bar or rod, and the jointed or flexible connection consisting of a rod and link pivoted together, the rod being secured to a step and the link being hung in lugs depending from a landing or platform.

CAPTAINS AND MATES ARE INVITED TO CALL AT THE OFFICE OF THE MARINE REVIEW AND LOOK OVER THE CHARTS AND SAILING DIRECTIONS OF LAKES SUPERIOR, MICHIGAN, HURON, ERIE AND ONTARIO, PUBLISHED BY THE HYDROGRAPHIC OFFICE.

Handsome Photographs of Lake Steamers.

For some time the REVIEW has been planning to secure photographs of lake vessels under way, giving an artistic marine scene as well as a picture of the vessel. Arrangements have been completed and the first consignment has been received. They are 8 by 10 inches on tea colored mounts and will be sent to any address. We have a number in stock, and as more are being taken every few days we can furnish prints of almost any of the modern freight steamers at \$1 each. The following are on hand:

J. J. McWilliams,	J. N. Glidden,	Cherokee,	D. Leuty,
Yukon,	Wawatam,	Majestic,	F. L. Vance,
Colgate Hoyt,	Briton,	Chas. Hebard,	Selwyn Eddy,
John Harper,	Pillsbury,	Saginaw Valley,	Forest City,
Gladstone,	Maritana,	S. S. Curry,	Wallula,
John V. Moran,	Malta,	H. J. Johnson,	Jim Sheriffs.
John Mitchell,	Quito,		

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Steel in Water Bottoms, Bilges, Etc.

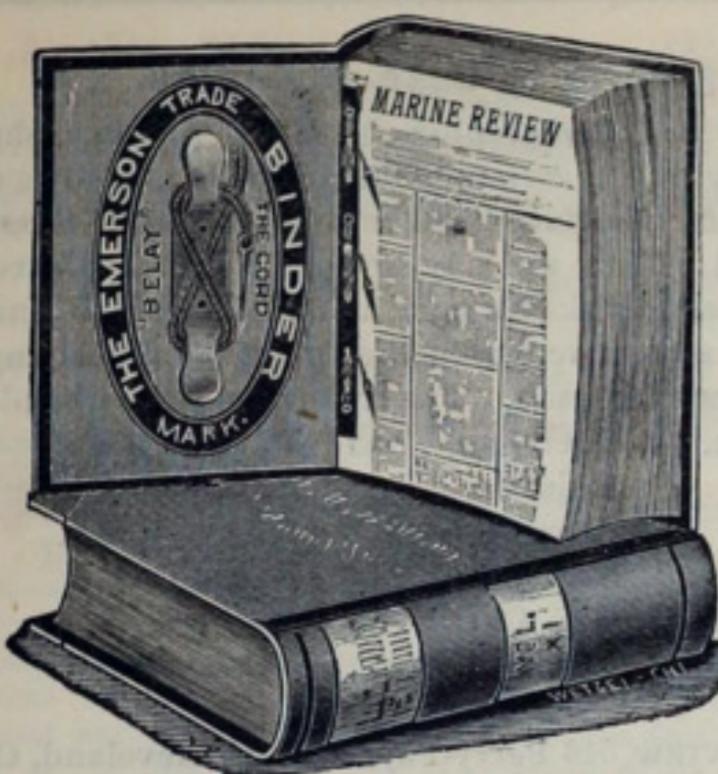
English shipping journals have of late been noting the alarm of vessel owners, notably owners of cargo steamers, regarding the durability of steel built vessels. The rapid deterioration of the decks, tank-tops and other parts which can not be properly cleaned and painted, has become so serious that several owners declare that they will go back to

iron, as vessels built of the latter material fifteen years ago are, they allege, in a much better state of preservation than steel vessels built five years ago. Already a movement has been made in substituting iron for steel in decks, and also for under the boilers and other places where there is any difficulty in painting. This not only refers to the plating but includes frames and reverse frames.

Letters addressed to names below remain uncalled for at the marine post office, Detroit:

Ayers, J. S.	Lozen, Alex.	Stinson, I. T. R.
Cole, W. H.	Lawrence, Charles	Tucker, Mildred
Crockett, Cruso	Newton, Albert	Van Brocklin, Mrs. E. B.
Danceson, Henry H.	Percutka, Joe	Yea, Frank
Finlason, Capt. D.	Plunez, Wm.	Fields, Ed.
Hemens, Giles	Smith, Joseph	Oag, Edward
Ayers, John	Hendrickson John	Reynolds, Mrs. S. G.
Ayers, Jack	Hitchen, Eber	Russell, Harry
Bruce, John	Hyde, W. G.	Ryan, William F.
Cooper, Wm. J.	Kennedy Maurice A.	Smith, Geo.
Dupine, John E.	Nelson, John	Taylor, Wm. F.

TO SHIP BUILDERS.—Office of Light-House Board, Washington, D. C., October 19, 1895. Sealed proposals will be received at this office until 2 o'clock p.m. on Friday, the 8th day of November, 1895, for furnishing the materials and labor of all kinds necessary for the construction and delivery of one first-class composite Light-Vessel No. 67 for a fixed sum for said vessel delivered. Forms of proposals, plans and specifications, showing what is required, can be had or seen by applying to this office. The right is reserved to reject any or all bids, and to waive any defects. JOHN G. WALKER, Rear-Admiral, U. S. N., Chairman.



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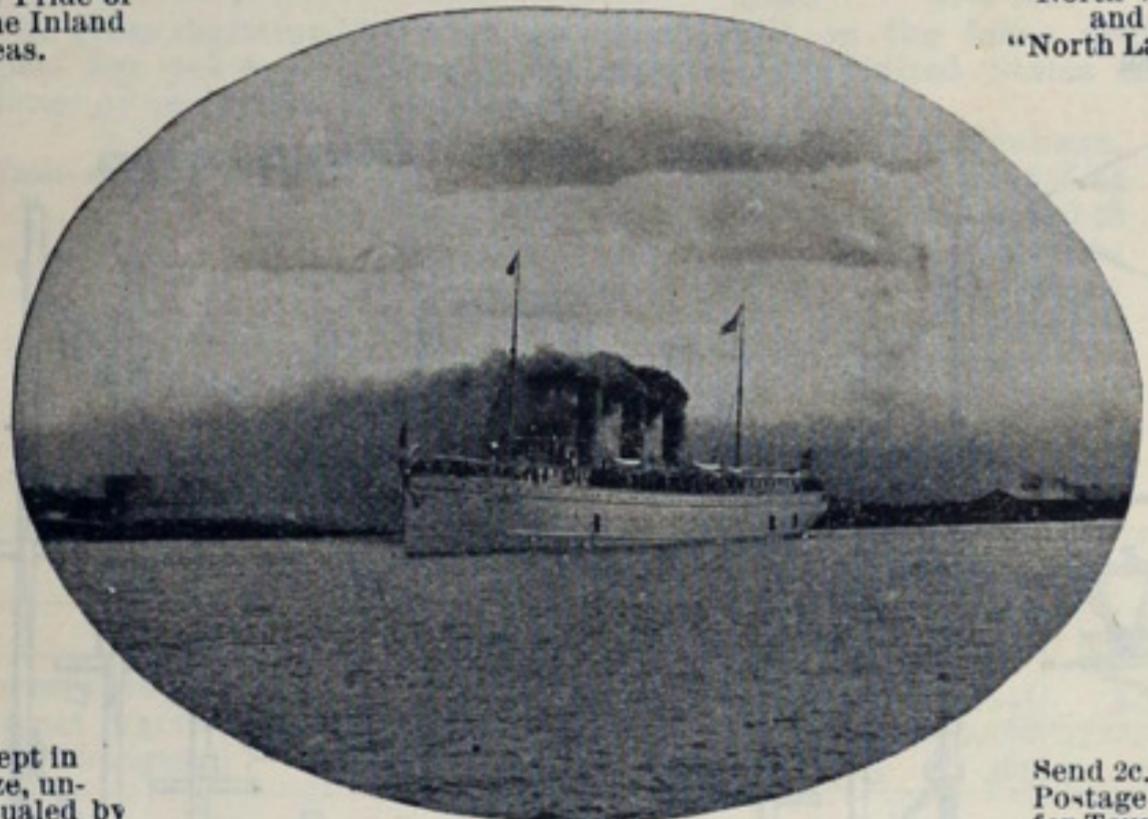
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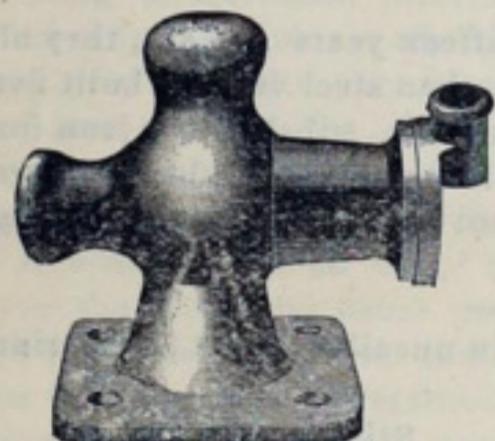
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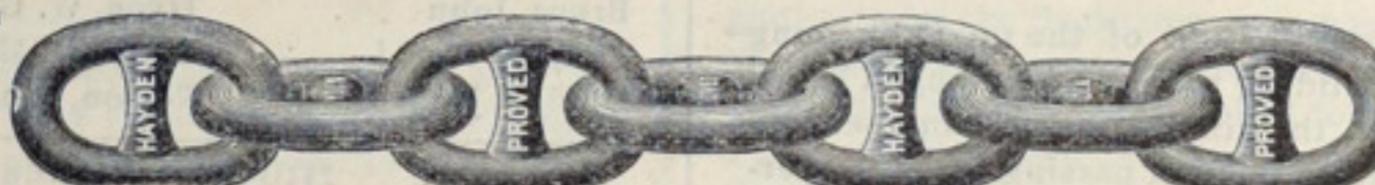
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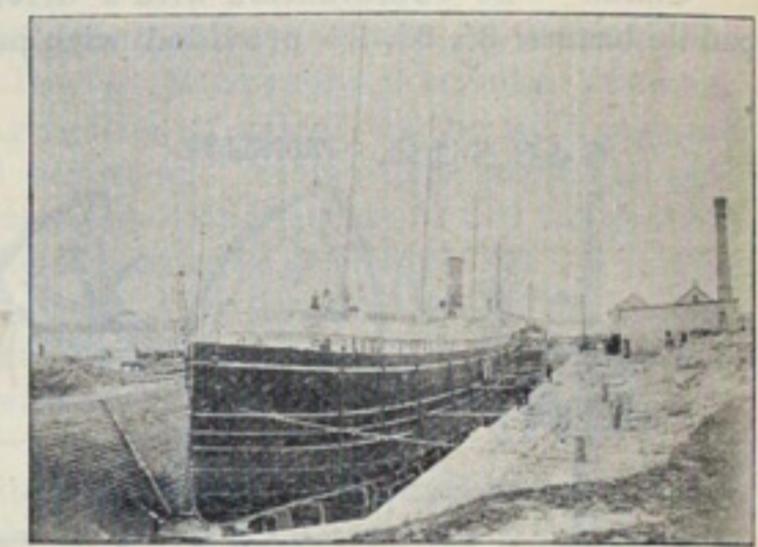
Length, 400 feet,

Width:

On top, 95 feet,
Bottom, 55 "
Gate, 62 "

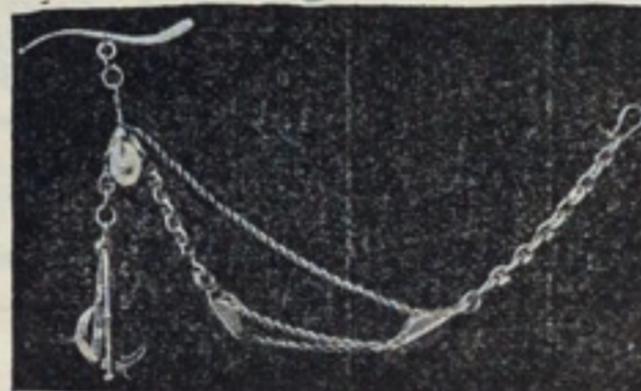
Depth:

To Floor, 20 ft.
To Sill, 18 ft.
On Blocks, 16 ft.



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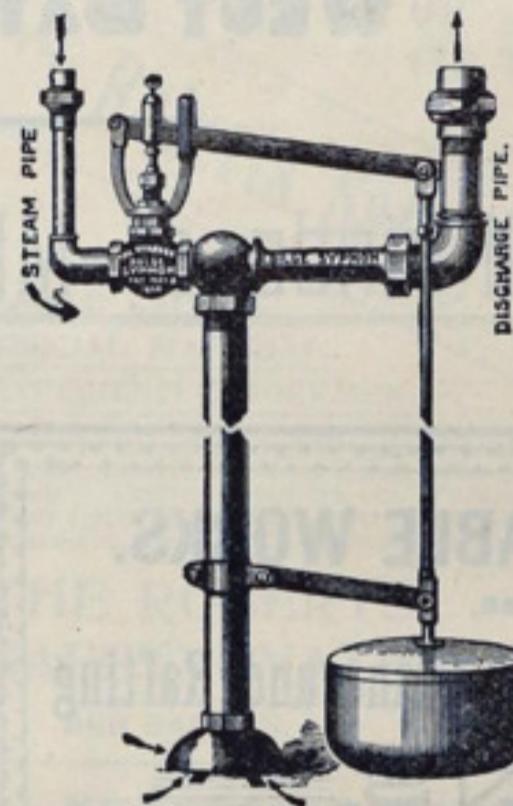
We call the attention of masters of vessels to the efficiency of our patented flare-up or flash light torch. It can be used with kerosene or spirits of turpentine. Its superiority over all other kinds of torches is that it is indestructible. Being filled with asbestos, it will last for years, and is ready for use at any moment. It gives a white flame three to five feet high, burns less liquid than any ordinary torch of the same size or larger. The combustion is so perfect that very little smoke is made, and the flame is therefore much brighter. At night you can wigwag with this torch. Rain or spray will not extinguish it, and the stronger the wind the better it burns. We have also a **Blue, Green and Red Burning Liquid**, to make any code of signals required. Yachtsmen will find this of immense value for signaling.

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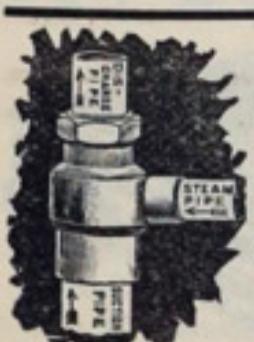
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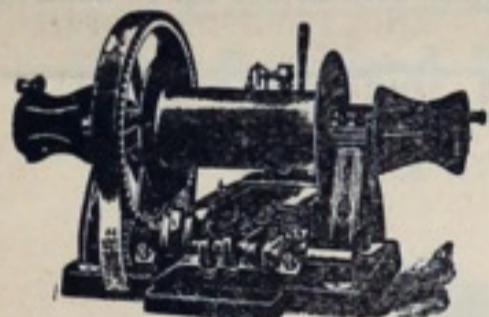
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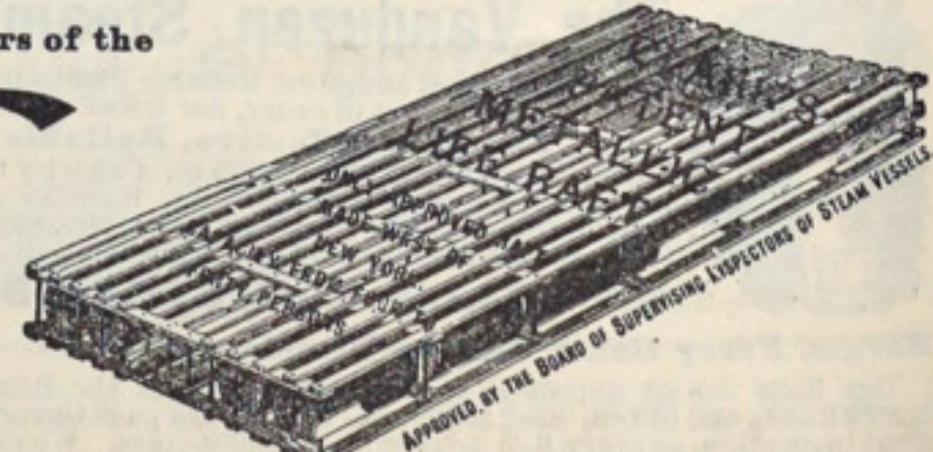
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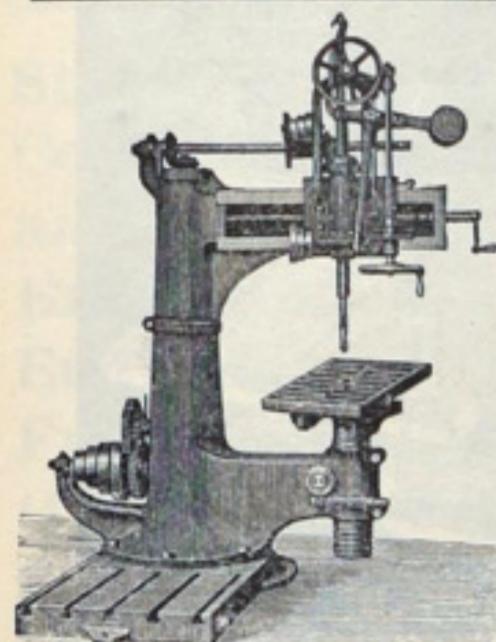
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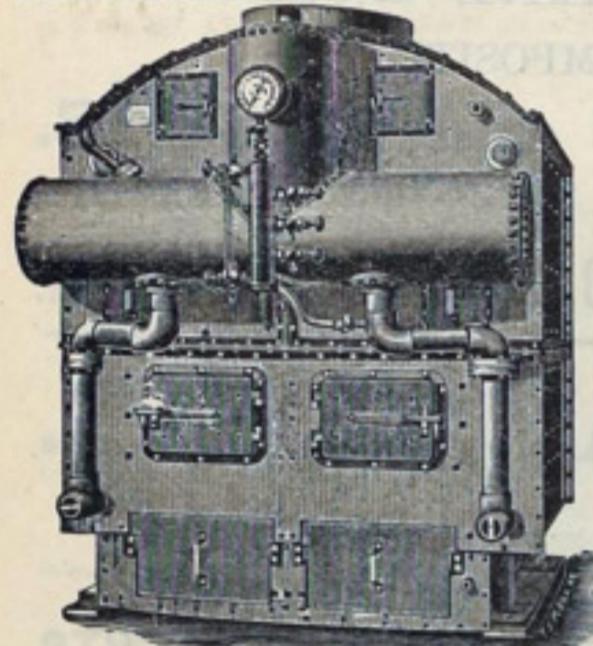
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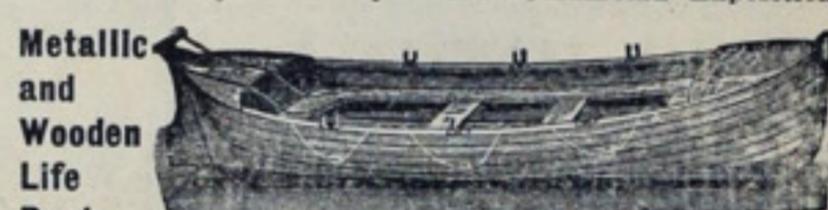
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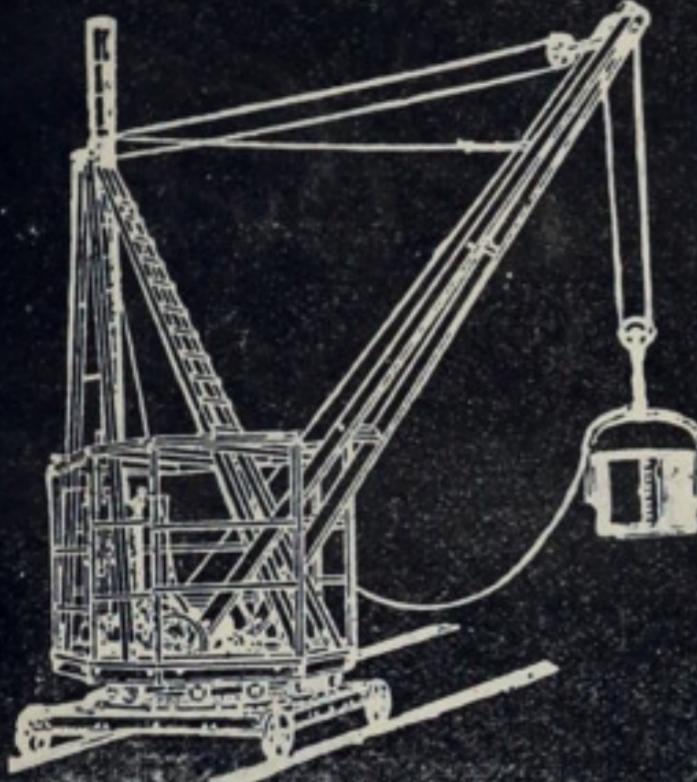
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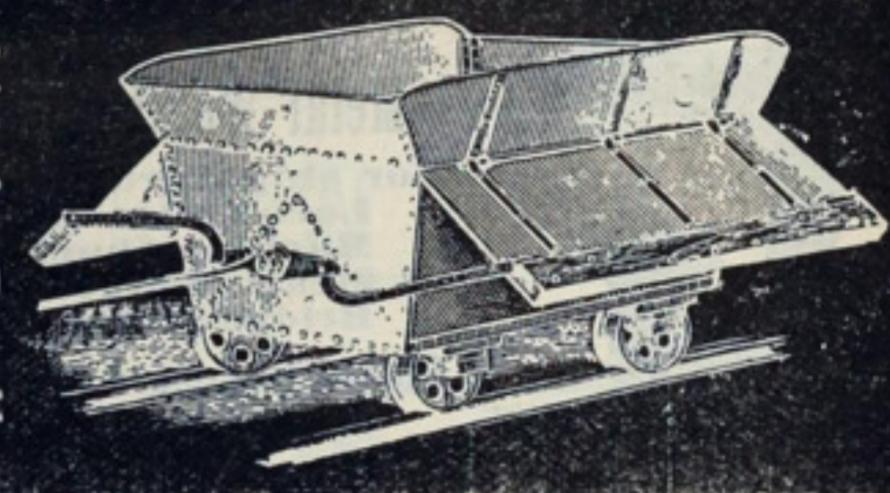


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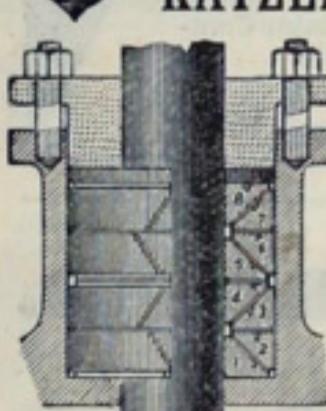
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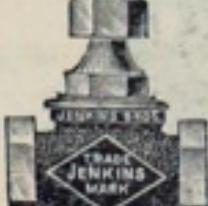
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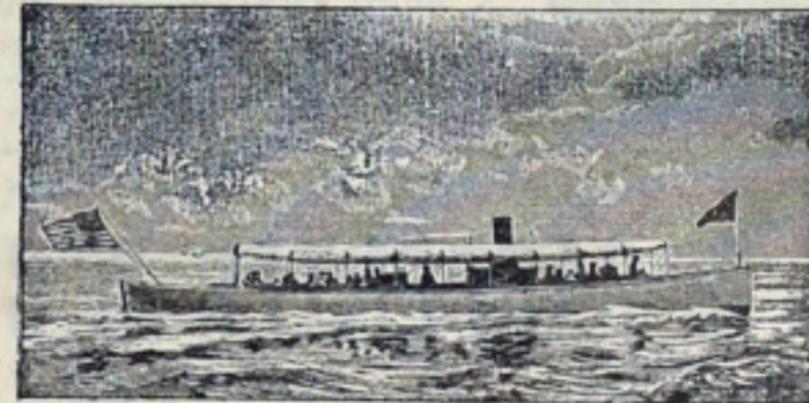
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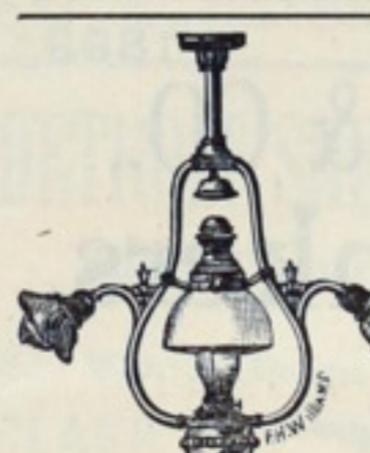
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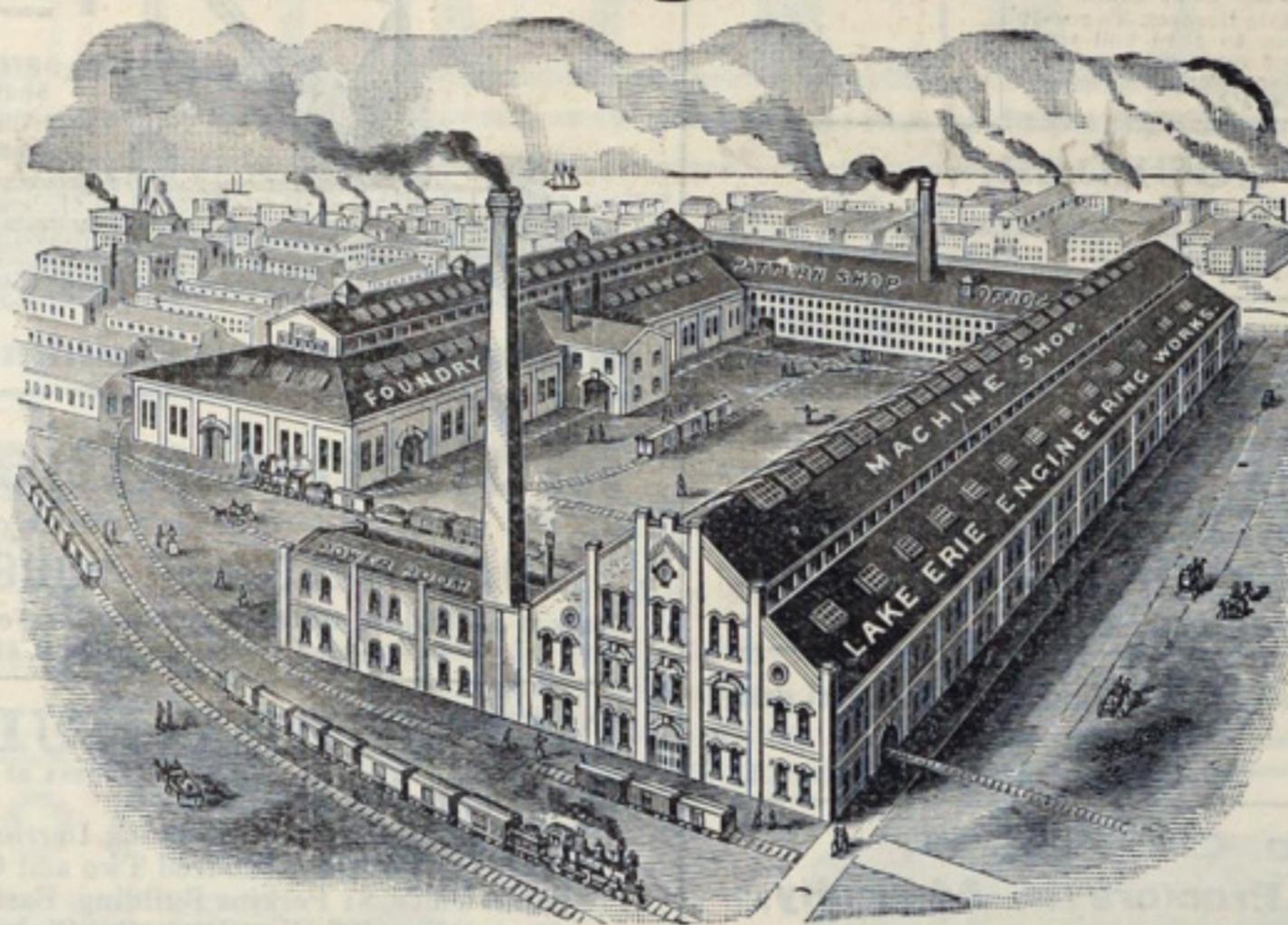
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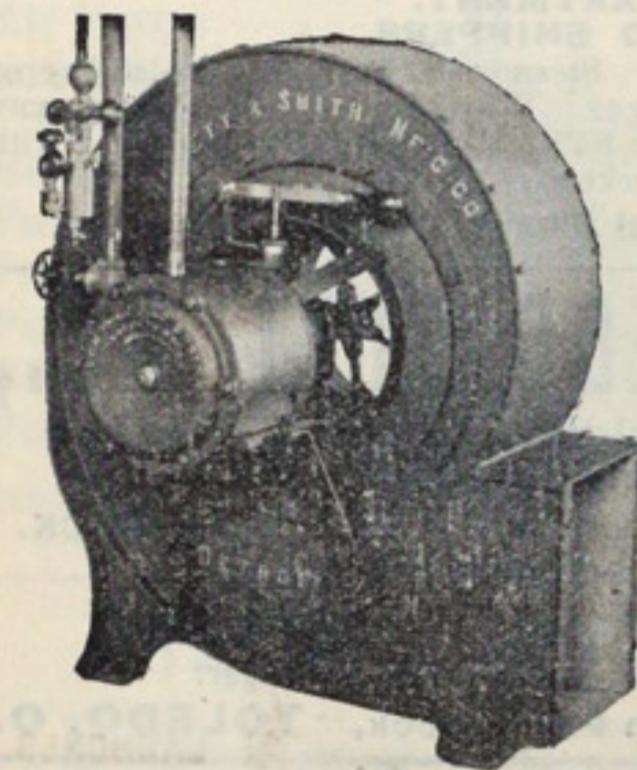
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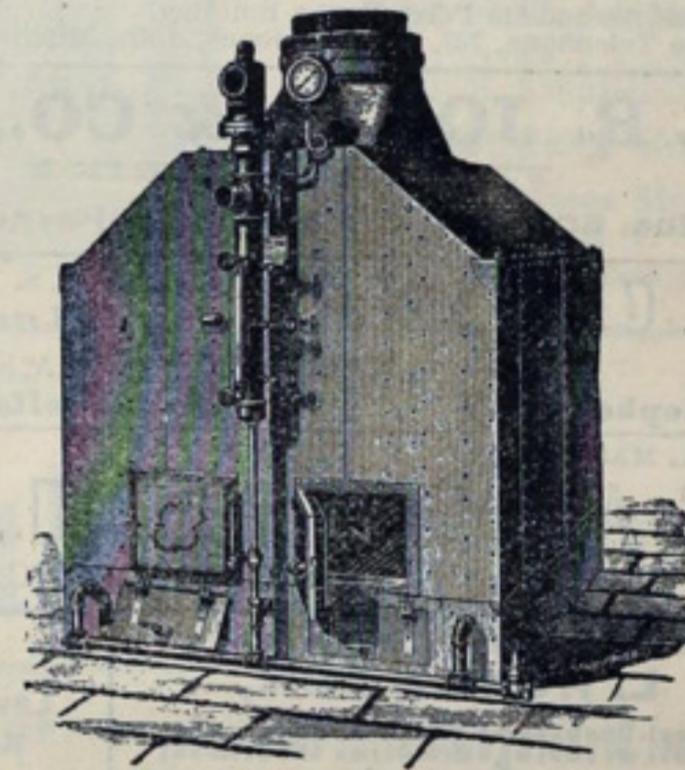
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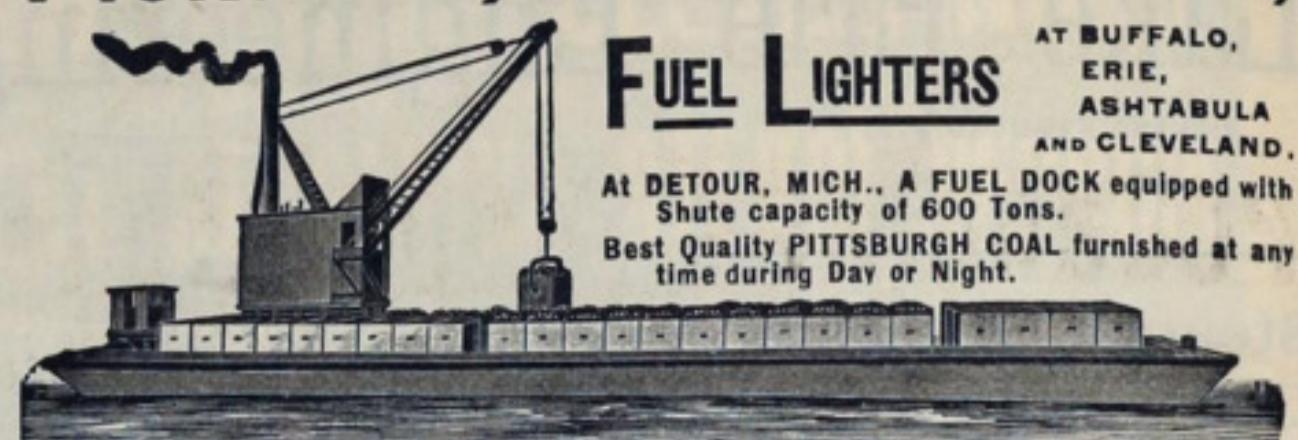
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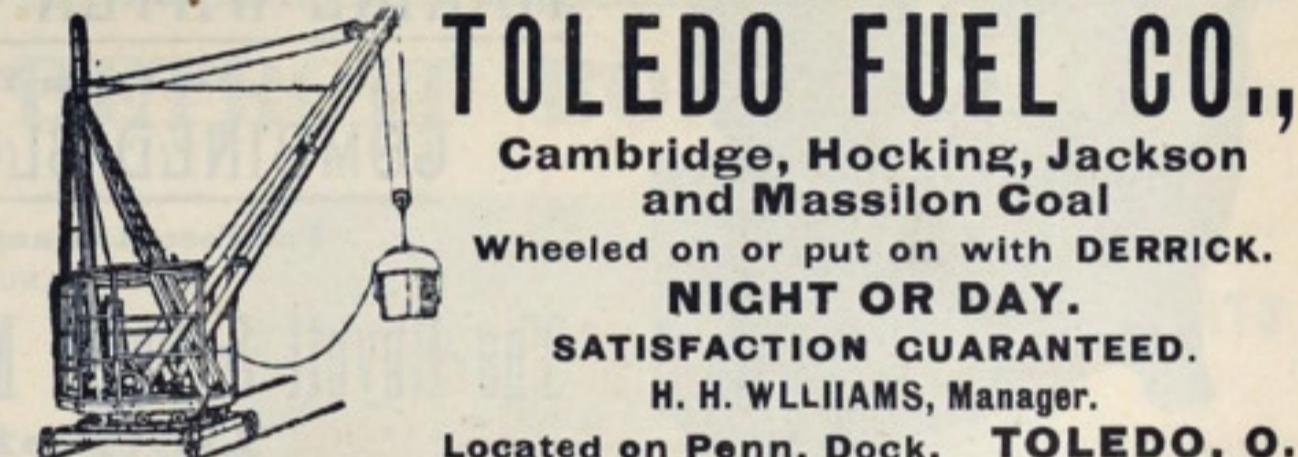
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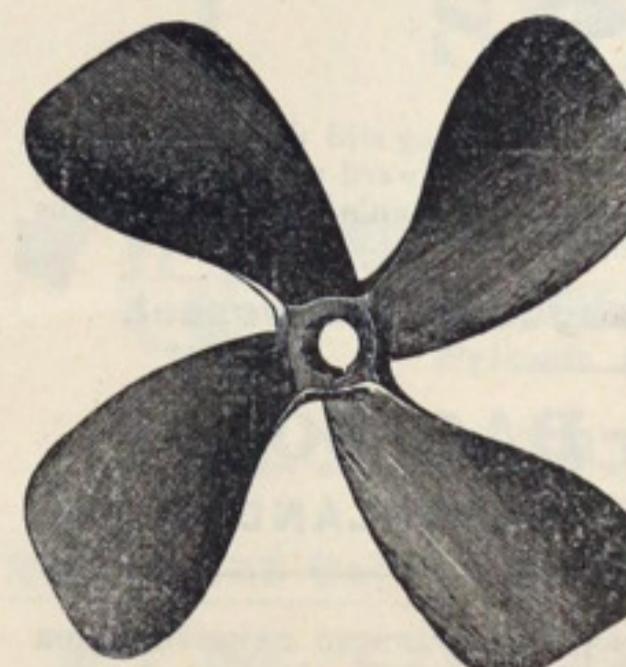
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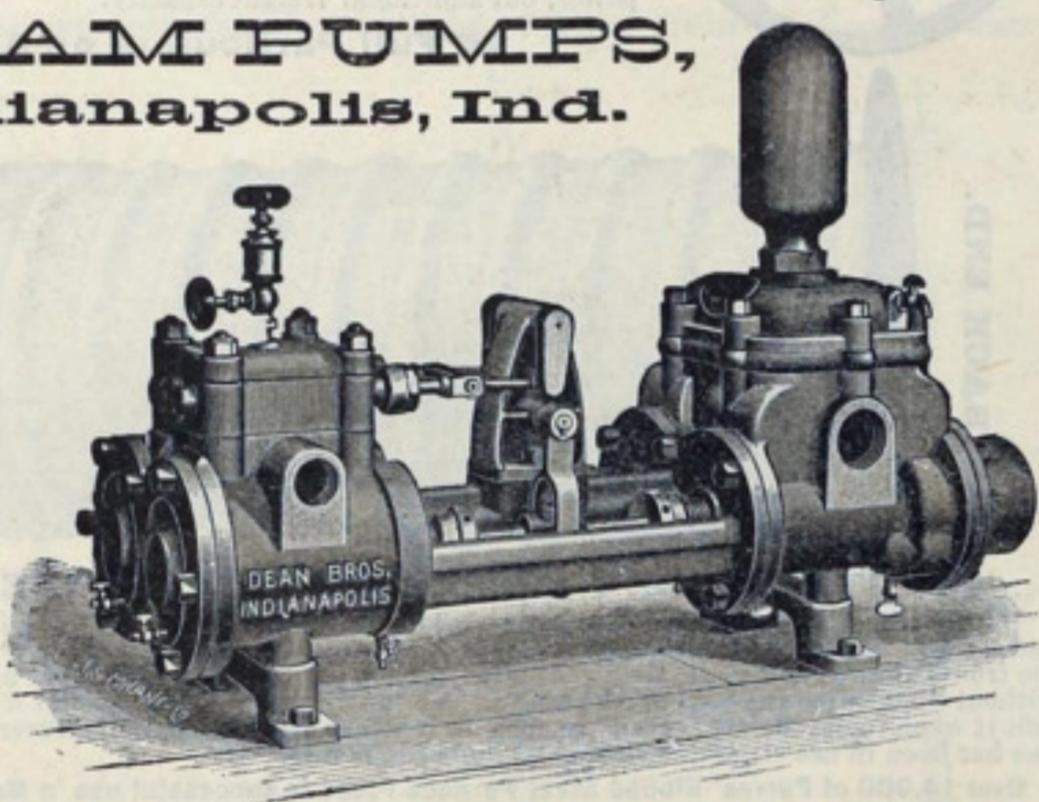
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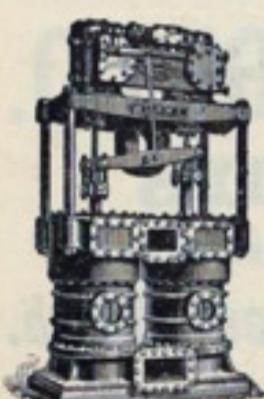
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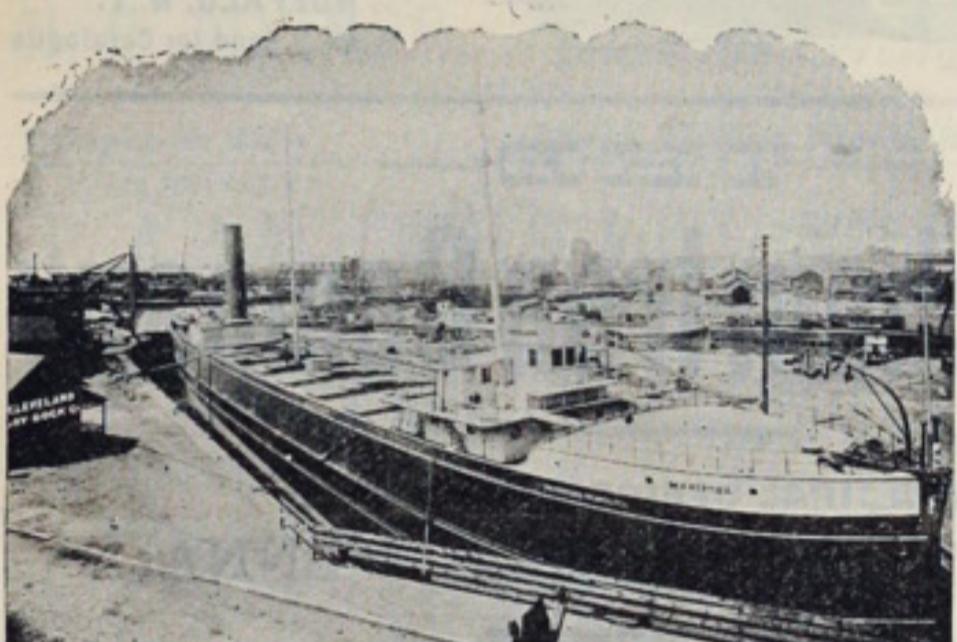
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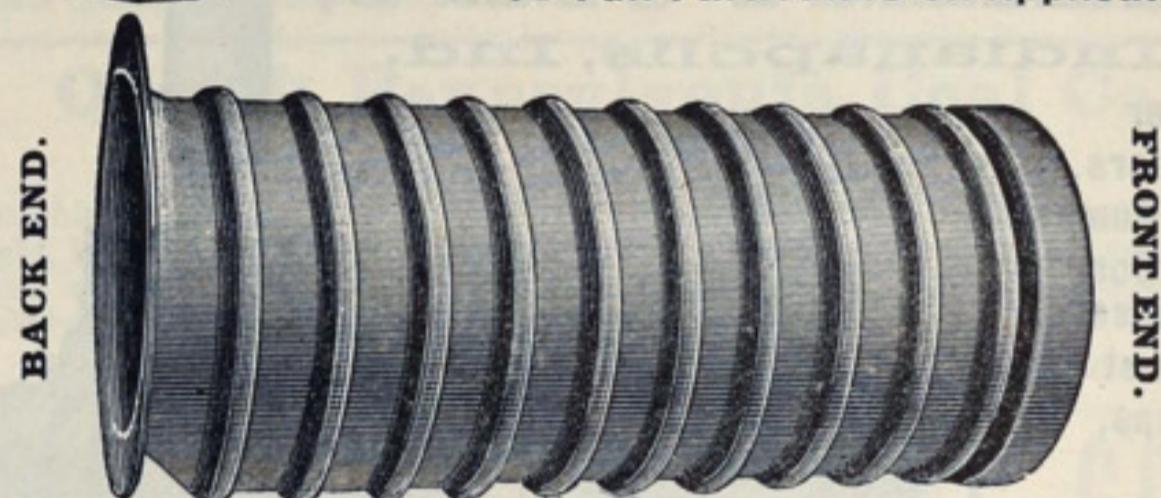
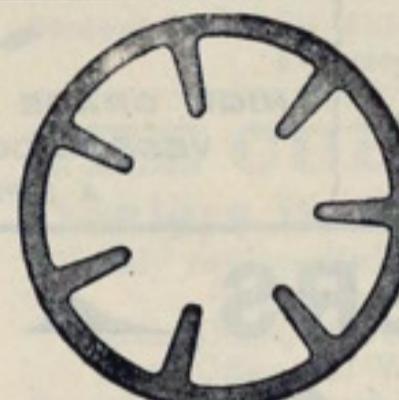
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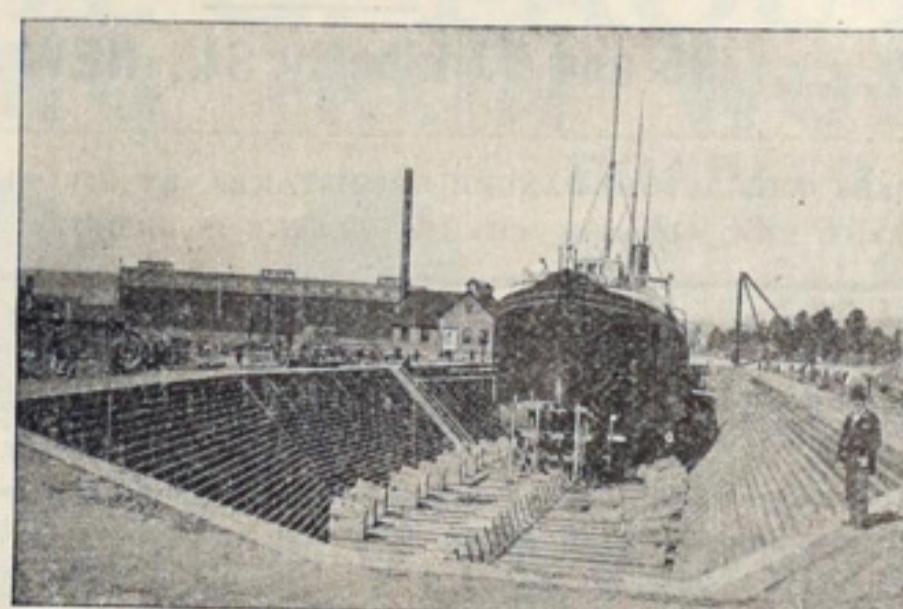
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